Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Fifty-ninth Annual Meeting in Danville, October 16-18, 1928

Vol. 55, No. 2.
WHOLE No. 911.

RICHMOND, VA., MAY, 1928

20 CENTS A COPY
$2.00 A YEAR

VON RECKLINGHAUSEN'S NEUROFIBROMATOSIS WITH REPORT OF CASES.*

By WILLIAM H. GOODWIN, M. D., University, Va.

In 1882 Von Recklinghausen[1] called attention to the association of multiple neuromas and cutaneous fibromas and called them neurofibromas. Subsequently, believing that the origin of these tumors was from the perineurium and endoneurium, he chose to place these cutaneous tumors among the fibromata and restrict the term neuroma to tumors arising from the proliferation of nerve cells.

The term Von Recklinghausen's disease has come to signify a pathological state that is essentially congenital, often hereditary in several successive generations and characterized by tumors arising from nerve tissue, pigmentation, physical weakness, and mental failure. Other terms used to signify this disease are: elephantiasis mollis, pachydermatocele, plexiform neuroma, rankenneurom, dermatolyse and elephantiasis nervorum. The prevailing opinion is that neurofibroma is the best term to apply to these tumors.

The cause of this disease has never been accurately determined, but according to Verocay, quoted by Cushing[2], "the entire process in all probability depends upon an early embryonal disturbance of development of the specific elements of the nervous system which may have affected cells which are capable of producing ganglion, glia, and nerve fibre cells". To further quote Verocay, "the tissue of the multiple nerve tumors, which until a short time ago was regarded as connective tissue, is not connective tissue but a peculiar neurogenous tissue. The nerve fibre cells themselves, or corresponding embryonal cells, which possibly have not reached the normal structure of nerve tissue, constitute the basis of the tumor. The form of Von Recklinghausen's disease is most often seen in the multiple tumor with or without pigmentation. The term tends to limit the disease and not include the unusual and atypical cases not so common.

Weber[3] gives the following classification: 1. plexiform neuroma unaccompanied by multiple molluscous tumors of the skin, with or without cutaneous pigmentation; 2. multiple molluscous tumors of the skin without obvious neurofibromatosis of the nerve trunks, with or without cutaneous pigmentation; 3. pigmentation of the skin not (at least as yet) accompanied by obvious neurofibromatosis of the nerve trunks or molluscous tumors (cutaneous neurofibromata); and 4. anomalous cases of neurofibromatosis complicated by the co-existence of bony or epidermic (papillomatous) changes. Sensory, motor, psychic and nutritional disorders are often observed in the more advanced and complete cases of this disease. Disturbances of the endocrine system are so constant in well developed cases that an etiological relationship must be considered.

This is not a very common condition since, according to Preiser[4] and Davenport, it is found in only about one in two thousand cases that present themselves to medical clinics or private practitioners for skin diseases.

Wherever these tumors may be found their origin can be traced to nerve fibers. Even those that seem to arise from the sweat glands have their origin in sympathetic nerve fibers. Quite a number of cases show tumors arising from the walls of the gastro-intestinal tract.

Hartman[5] reports an interesting case of malignant degeneration of a nuerofibroma of the wall of the stomach.

Neuromas of the acoustic nerve are often associated with generalized neurofibromatosis and tumors of the other cranial nerves. Christin[6] and Naville collected twenty-three cases of central neurofibromatosis. Two had tumors of the optic nerve. One patient had thirty-one tumors inside the skull. The fifth case in this report seems to have had a neuroma of the acoustic nerve. This disease may not be apparent at birth but the dominant trait is present in the germ plasm and characteristic

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

manifestations may appear in childhood or not till late in life. In this report two sisters developed tumors about the onset of puberty. Injury seemed to have had a bearing on the development of the disease in case five. In case six café au lait pigmentation was present at birth and not till the child was twelve years of age, possibly approaching puberty, did tumor formation appear. Pregnancy seems to have some bearing on the progress of the disease.

In Meek's case, quoted by Preiser[4] and Davenport, the first nodule appeared on the right shoulder during the first pregnancy and steadily increased in size. During each succeeding pregnancy, but not in the interim, new growths appeared.

The characteristic tumors may appear anywhere on the surface of the body but are thickest on the trunk. They are rarely found on the palmar surface of the hands and feet, which throws doubt on injury being an exciting etiological factor. The number is very variable. Hashimato counted 4,503 on the skin of a Japanese man. The tumors are usually not symmetrical. They may surround a nerve, be on one side, invade the nerve or be pedicled. When sarcomatous change takes place, metastases are not usual and, if entirely removed, local recurrence is not likely. There was no recurrence locally in case five of this report. While the tumors usually vary in size from a few mm. to a few cm. there are cases showing large pendulous growths as illustrated in figures 5, 7 and 10.

Laughnane[7] reported the case of an Arab who was covered with fibroma molluscum of various sizes. One hung from the loin which weighed 70 lbs., and had replaced muscle tissue and dragged out the abdominal wall. The large tumor in case two of this report had replaced muscle and so dragged on the perineum that the uterus, adnexae and cecum were prolapsed through the ischio-rectal fossa into the middle of the tumor.

In case 4, figures 10 and 11, show a pendulous tumor attached to the subclavicular region. In case six, figure 12, can be seen the pendulous nature of the growth which would soon push the ear forward and hang in a fold over the breast.

In general neurofibromatosis it is not practical to excise all the tumors but of course isolated ones giving trouble or causing an unsightly appearance can be removed. The painful plexiform neuromata should be excised even though the nerve trunk has to be sacrificed.

In case of central neuromata complicating Von Recklinghausen's disease, the question of surgical treatment must be decided after a most careful consideration of all the phases of the disease in the particular case.

In case two, reported here, no attempt should have been made to remove the recurrent tumor

Fig. 1. Case I.—The father, age 44, showing the stump of amputated arm and multiple tumors.

of the buttock, and would not have been, had the operator anticipated the complication of herniated pelvic and abdominal organs.

In case six the operative treatment was planned to be done in several stages after the technique of Sistrunk[8] who so successfully removed an unsightly cicatrix from the neck of a patient who had been burned by the Roentgen ray in the treatment of a goiter.

The following reports are of cases admitted to the University of Virginia Hospital. Some cases of very incomplete Von Recklinghausen's disease have not been included.

Case I.

History Nos. 5470 and 36932. Figures 1 and 2. J. A., negro; male; laborer; aged forty-four. Admitted November 12, 1911, complaining of tumors on the body.

Fig. 2. Case I.—A posterior view showing tumors, one fairly large between the scapulae.

The patient does not remember his parents or any other ancestors. He had one sister who died in 1901 but did not have tumors on the body. The past history is negative except for pneumonia and abscess of the neck. He has been married twenty years and is the father of five children. One daughter (the second case in this report) has many tumors on the body and one large one on the buttock. Another daughter (the third case in this report) has multiple tumors. The patient has three sons whom he says are free from tumors. (Subsequent information by personal inspection, however, has shown that the two youngest sons have multiple tumors).

There have been tumors on the patient's chest and abdomen ever since he can remember and have grown very little. At the age of ten years he noticed a small soft tumor on the right arm just above the elbow. This tumor continued to grow and at the age of twenty-seven years he had it removed and says it weighed twenty lbs. Four years later the arm became very much swollen and his physician opened it and removed a large quantity of blood. Five years later the arm suddenly swelled while piling logs and became very tense and painful. His physician then amputated the arm through the upper third. Healing was very slow.

Fig. 3. Case I.—The father, 10 years later, showing emaciation and senility. Tumor of stump has recurred and many more tumors have appeared.

The patient is well nourished and presents many spherical nodules over the surface of the body, varying from a few mms. to several cms. Some are deeply pigmented; some are pedicled, but most of them are sessile. They are soft and painless, and shotty and cord-like structures can be palpated in many of them. The muscles of the right shoulder are atrophied and the stump of the amputated arm is healthy. General physical examination is negative except for the above mentioned tumors and very bad teeth. The tumors are thick on the forehead and about the lower jaw, as well as on the back and anterior aspect of the chest wall. There are several small tumors on the thighs.

The patient came to the Hospital to visit his two daughters and consented to be admitted for study, refusing to permit the excision of a tumor for microscopic sections and was discharged the following day.

The photographs in figures 1 and 2 are not good, but a comparison with figures 3 and 4 will show what a marked change has taken place in this man during an interval of ten years.

Fig. 4. Case I.—Posterior view of the father 10 years after first admission.

The second admission was for a discharging sinus leading to an area of osteomyelitis in the upper third of the right humerus. The patient seems very much older and very weak. He can barely stand alone.

There is almost complete loss of memory and his mentality has become much impaired. Many more tumors have made their appearance and some have increased in size. Pigmentation is much more marked. Râles can be heard throughout both lungs and there is a systolic murmur. Wassermann is negative.

On account of the hopeless condition of this patient, he was made as comfortable as possible for one month and discharged unimproved. Subsequent information revealed that the patient became paralyzed and shortly afterward died.

Case II.

History Nos. 5395 and 64078. Figure 5. M. A., colored, female; domestic; aged eighteen. Admitted October 30, 1911, complaining of multiple tumors over the body and particularly a very large one on the right buttock.

Fig. 5. Case II.—A daughter showing large tumor of buttock which was removed.

Her father is the first case in this report and her sister is the third. There are three brothers and the two youngest have multiple superficial tumors. The past history is essentially negative. The menstrual history is normal and she has never been pregnant. She is well developed and well nourished, but mentally stupid.

About five years previous to admission, the patient noticed a small tumor on the right but-

tock. It was soft, round and painless. This tumor increased in size, extending from the crest of the ilium to the mid-thigh, giving much inconvenience. In the upright position the tumor hangs from the buttock along the posterior aspect of the thigh. Over the sacral region there is a wide area of dark pigmentation. The tumor is soft and the skin is thick and adherent, giving a pig-skin appearance. It measures 40 cm. in length and 80 cm. in its maximum circumference.

Under ether anesthesia the tumor was removed with great difficulty because of its size and particularly because of the many large blood vessels entering it. The skin was very thick in places. The walls of the vessels were so friable that hemostats fell off by their own weight, necessitating the use of many suture ligatures. The gluteal muscles seemed to have been replaced by neoplastic tissue. It was necessary to cut through tumor tissue thereby giving a poor prognosis. On gross examination the tumor was made up of strands and whorls of coarse fibrous tissue. In some places it looked myxomatous and areas of hemorrhagic degeneration were present. Many large blood spaces could be seen throughout the growth. The microscopic report was "neurofibroma".

This patient returned on August 14, 1927, with recurrence of the tumor of the buttock and a much more generalized neurofibromatosis. (See figures 6, 7 and 8). She has held a position and successfully concealed the large, recurrent tumor from her employer.

The patient has lost much weight, and while stupid on previous admission, she seems feebleminded now. The menstrual history has continued normally. There are many areas of pigmentation, particularly surrounding the attachment of the tumor of the buttock. Many of the smaller tumors are pigmented. Comparing the photograph on first admission (Figure 5) with those taken on this admission (Figures 6 and 7), one will be impressed with the loss in weight and change in facial expression which somewhat suggests acromegaly.

The cicatrix from the former operation can be seen over the tumor which hangs from the right buttock to the popliteal space. The skin is rough and thick and the tumor is soft with nodules and cord-like structures palpable in many places. The skin over and around the tumor is darker than the normal skin and pig-

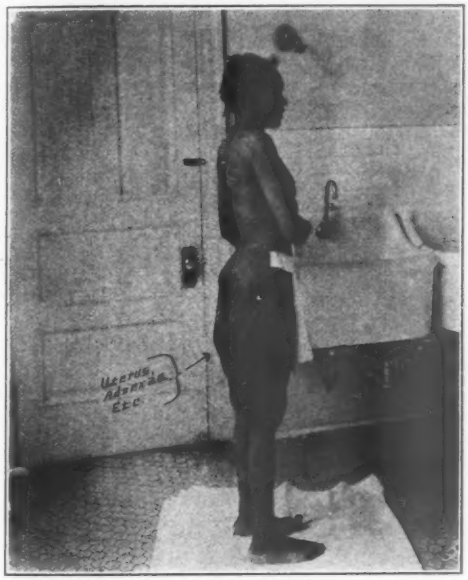


Fig. 6. Case II.—Same patient as Figure 5, but 16 years later, showing recurrence of tumor; many others have appeared. The patient has lost weight and facial expression has changed.

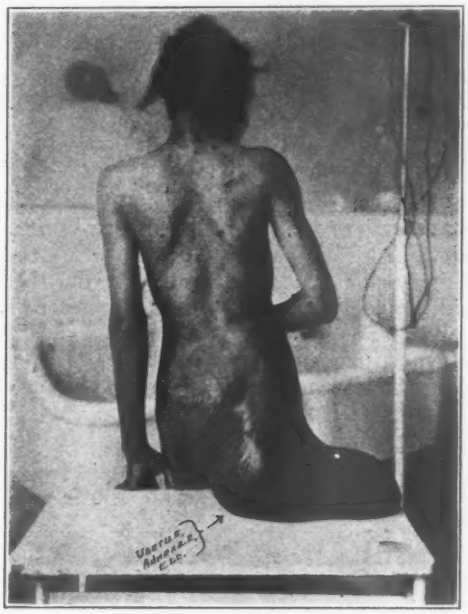


Fig. 7. Case II.—Same picture as Figure 6, showing many small tumors. Over the large recurrent tumor can be seen the cicatrix of former operation and dilated vessels.

mentation extends down the thigh. About the middle of the tumor on a level with the mid-thigh, can be palpated a firm, globular, movable mass, about five inches in diameter. This seems to be an encapsulated portion of the tumor. Large vessels can be seen around the attachment of the neoplasm. The former operation was very difficult on account of the large blood spaces, but in as much as the patient is very much incapacitated by this growth it was thought wise to remove this tumor even though it should recur.

The patient was anesthetized with nitrous oxide and oxygen gas and, to facilitate handling the unwieldy tumor, it was suspended by ice tongs and an overhead Balkan frame and pulley. This proved to be a great help.

The tumor was outlined with appropriate incisions, encountering large blood vessels and thick skin as was described before. It was absolutely necessary to cut through tumor tissue. There was no muscle tissue under the tumor and one was unable to determine the origin of the neoplasm. The firm mass, about midway of the tumor and on a level with the mid-thigh, was exposed, thinking that it was an encapsulated portion. On opening this so-called capsule it was found that the peritoneal cavity had been entered and the mass proved to be the uterus and adnexae, bladder, cecum and appendix which had prolapsed from the pelvis through the ischio-rectal fossa. The uterus contained fibroid tumors which gave it

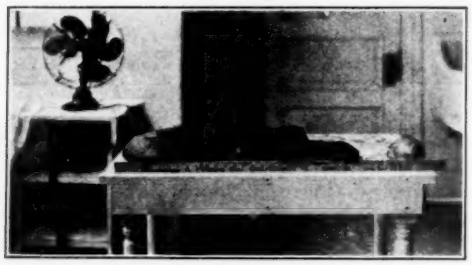


Fig. 8.—Neurofibroma and uterus with fibroids removed from Case 2. This is laying on a table which measures about a yard in length.

the above mentioned size and made it impossible to reduce this herniated organ. It was therefore necessary to do a hysterectomy in this most unusual location.

The patient showed shock and a glucose infusion with adrenalin was given. The operation was hastily completed and the patient returned to the ward where a transfusion was being given when she died.

Figure 8 is a photograph of the removed neurofibroma and the uterus with fibroid tumors.

Gross Appearance of the Specimen: The skin shows an old scar that runs the length of the specimen. Many large nodules can be felt under the thickened skin. The subcutaneous tissue is of a grayish color, apparently fibrous tissue. The tissue is edematous and stringy. A number of small cyst-like areas can be seen. Only a few nerve-like structures can be made out. Sections show nerve-sheath

Fig. 9. Case III.—Another daughter of Case I and sister of Case II, showing neurofibroma arising from supraorbital nerve.

cell type of fibroma with marked myxomatous appearance. There are a number of nerve fibers atypically arranged, also a number of blood vessels and areas of hemorrhage. The skin is thick and shows marked pigmented endothelial leucocytes diffusely scattered in the derma and subcutaneous tissue.

Case III.

History No. 5394. Figure 9. M. A., colored: female; domestic; aged 17. Admitted October 30, 1911, complaining of a tumor of the forehead.

Her father is the first case in this report

and her sister is the second. Two brothers have similar tumors. Past history is essentially negative. Menstrual history is normal.

Two years before admission the patient noticed a tumor on the right side of the forehead. The growth has slowly but steadily increased in size till now it is about five inches long and three inches wide. It is becoming pendulous but has not yet affected the eyelid. It is soft, movable, painless, and nodules and cord-like structures can be palpated in it. The skin over the tumor shows an herpetic eruption. This growth seems to arise from the supraorbital nerve. The patient is well developed and well nourished but stupid. There are other small, sessile, soft tumors scattered over the trunk and forehead. There are several nodules on the buccal mucosa and one on the tongue. A general physical examination shows no other abnormality. The tumor in the supraorbital region was excised and traced to its origin in the supraorbital nerve. Hemorrhage was free on account of the large blood spaces. There was no encapsulation and the tumor consisted of coarse strands of fibrous tissue traversed by large blood spaces and overlaid by thick skin. The pathologist's report was neurofibromyxoma.

Fig. 10. Case IV.—Showing neurofibromatosis and a pendulous tumor held by an assistant.

Case IV.

History No. 13407. Figures 10 and 11. E. G., colored; female; domestic; aged sixty. Admitted September 8, 1915, complaining of a painful tumor on the right shoulder and other tumors over the surface of the whole body.

Fig. 11. Case IV.—Posterior view.

The patient says her father and paternal grandmother had similar tumors.

The appearance of the patient is that of an old woman but she is quite active. There are bilateral pterygia. She has had tumors on the body ever since she can remember. Two months before admission a tumor over the

right deltoid muscle became very painful and she applied poultices. It broke down and bled freely and has never healed, giving off a foul bloody discharge. Over the entire surface of the body, but chiefly over the trunk are many tumors varying from a few mms. to several cms. in diameter. Some are sessile and others have well formed pedicles. They are adherent to the skin. Attached to the anterior aspect of the right shoulder is a fibroma molluscum which hangs about fourteen inches. The skin over and around this tumor is pigmented and nodules and cord-like structures can be palpated in this soft, flabby neoplasm. This growth and the ulcerated tumor over the deltoid region were removed and the latter reported by the pathologist as being a neurofibrosarcoma. The patient was discharged from the Hospital and subsequent inquiries concerning her have been unsuccessful.

Case V.

History Nos. 12246, 26753, 27187 and 31281. W. L., white; male; laborer; aged twenty-eight. Admitted March 30, 1915, complaining of a painful tumor of the left arm and others scattered over the body.

There is no family history of similar affection.

The past history is unimportant save for the presence of scattered superficial tumors which gave no trouble till eight years before admission when the patient was thrown from a horse, causing injury to his left arm necessitating the application of splints. Six weeks later the splints were removed and there was noticed a small hard tumor on the inner aspect of the arm two inches below the axillary fold. This tumor gradually grew till on admission it extended in a fusiform shape nearly to the inner condyle of the humerus. The mass was quite tender and pain radiated to the fingers. There is marked atrophy of the muscles of the left arm and shoulder. The patient is small but fairly well developed. The eyes show slight exophthalmos, vision is normal and pupils react normally. He is slightly deaf in the left ear. There is a small nodule, one-half cm. in diameter on the tongue. Both lobes of the thyroid are slightly enlarged. The muscles of the right leg are atrophied and flexion of the foot is limited. Both patellar reflexes are absent. There are about fifty tumors over the surface of the body varying from 1 cm. to 3 cm., exclusive of the one on the arm. Most of the tumors are in the skin, and are soft, painless, movable, and some are pigmented. Very tender, fusiform tumors seem to arise from the left ulnar and posterior tibial nerves. The tumor of the ulnar nerve was enucleated and the pathologist reported a neurofibrosarcoma. The patient was readmitted four years later showing no recurrence of the tumor previously removed. Muscular atrophy has increased. The tumor of the posterior tibial nerve has caused him much pain locally and radiates to the plantar surface of the foot. There is marked toe drop and plantar reflexes have disappeared. He has a steppage gait. Painful neurofibromata were easily removed from the left thigh and dorsum of the foot. Removal of the tumor from the posterior tibial nerve was difficult and the nerve had to be resected and anastomosis done. While in the Hospital, sixty days, the patient complained of severe headache and failing vision. He was allowed to return home but after an interval of eleven days he returned with mental depression and extreme weakness. He has a staggering gait, deviating to the left and has frequently fallen. His headaches are more severe and his audition and vision are much impaired. Blood and spinal fluid Wassermann are negative. Pressure of spinal fluid is 210 mm. There is bilateral choking of the discs and retinal hemorrhages and exophthalmos has increased. Tinnitus aurium has given the patient much annoyance.

A subtemporal decompression was done and the dura found very tense. When the dura was incised the brain bulged to such an extent that the pia mater split. The muscle could not be sutured till the lateral ventricle was aspirated.

The patient remained in the Hospital five months after the decompression. He suffered less from his headaches but there was no improvement in his vision and audition. He returned home where he remained for eight months and was then readmitted. He has frequently fallen in unconsciousness and the hernia cerebri is very large and tense. He is totally blind in the right eye and almost so in the left. Hearing is no worse. The patient was not treated on this admission.

Case VI.

History No. 63509. Figure 12. A. L., white;

female; school girl; aged thirteen. Admitted July 15, 1927, complaining of a "birth mark" on the face.

Family history is unimportant.

The child is underdeveloped, appearing not more than eight years of age. She is mentally alert. There is a deeply pigmented area extending from the occipital region to the left, pushing the ear forward and involving the cheek. It then extends down the neck and shoulder to below the acromial process. Posteriorly it is seen to extend to the spine of the scapula and anteriorly nearly to the nipple and across the mid-line.

The mother says the condition was present

Fig. 12. Case VI.—Elephantiasic neurofibroma of neck, face and shoulder, surrounded by cafe au lait pigmentation.

at birth but that one year ago the skin began to thicken and take on a darker color. At present the margins of the pigmented area are café au lait color. Where the skin is darker and thicker it is beginning to become pendulous. The skin shows irritation from scratching to relieve the annoying itching. This thick, elephantiasic skin is very movable on the underlying tissues and under this skin in the submaxillary and supraclavicular regions can be palpated hard, nodular masses, some of which are 2 cm. in diameter, suggesting enlarged lymph nodes. Coarse, cord-like structures can also be palpated. A few other small café au lait areas are found over the trunk and arms.

The patient is very sensitive over this disfigurement and anxious to have at least the pendulous part removed.

An elliptical incision was begun over the left mastoid process and carried to near the acromial process removing an area of skin eleven by five inches in dimensions. Underlying the skin was a plexus of nerve fibers coiled up in the tissues, many of which were 3 mm. in diameter and several neuromata were 1 and 2 cms. in diameter. These were removed as thoroughly as possible and the skin edges approximated and sutured.

The mother was instructed to massage the area after healing became secure and then a similar operation will be done, hoping that in stages the entire pendulous area can be removed.

Microscopic sections show marked increase in cellular fibrous tissue, both in the derma and the subcutaneous tissue with bands of hyalinization. There is infiltration with round cells and plasma cells. Papillary projections are broad, and lymph spaces are prominent. There is increase of pigment. Sections of the cord-like portions show neurofibroma consisting of sheath cells and fibrous tissue infiltrated with round and plasma cells. Nerve fibers are also found.

Diagnosis: Cutaneous neurofibromatosis with (non parasitic) elephantiasis.

References.

1. Von Recklinghausen, F. Ueber die multiplen fibrome der Haut und ihre Baziehung sur den mult plen neuromen. Berlin, 1882. A Hirschwald.
2. Cushing, Harvey. Tumors of the Nervus Acusticus. W. B. Saunders Company. 1917.
3. Weber, F. P. *Brit. Journal Dermat.* 21:49-53. 1909.
4. Preiser, Samuel A., and Davenport, Charles B. Mult'ple Neurofibromatosis (Von Recklinghausen's Disease), and Its Inheritance with Description of a Case. *American Journal of the Medical Sciences.* Oct., 1918. 156.
5. Hartman, Hans. F.bromyxoscarcoma of the Stomach in a Case of Neurofibromatosis. *Surg. Gyn. and Obst.* XLIV. 3. March, 1927.
6. Christin and Naville. A Case of Recklinghausen's Disease with Involvement of the Peripheral Nerves, Optic Nerve and Spinal Cord. *J. Nervous and Mental Diseases.* 56:441-452. November, 1922.
7. Laughnane, F. McG. A Case of Von Recklinghausen's Disease. *The Lancet.* 1:1301. June 18, 1921.

8. Sistrunk, Walter E. Contribution to Plastic Surgery. *Annals of Surgery.* Vol. LXXXV. February, 1927.

DISCUSSION.

DR. JOHN S. HORSLEY, JR., *Richmond:* Dr. Goodwin is to be congratulated on his very interesting presentation of the subject and the unusual case reports. It is a fairly common occurrence to see small isolated neurofibromata with the typical shrunken and soft characteristics. When you feel these lesions between two fingers the sensation is much like that obtained when one feels a California seedless raisin. These tumors have a very small pedicle and may often be quickly excised without any anesthetic whatever. Of course, the ones Dr. Goodwin showed were not in this class of easily excised lesions.

When I was in medical school in Boston I saw a number of cases of this disease associated with neuromas of the acoustic nerve, but in the last five years I have seen only two cases of severe neurofibromatosis. In neither of these latter cases was it felt that anything could be done to help them—except skinning and putting on a new skin. The lesions were entirely too numerous. These tumors, as Dr. Goodwin pointed out, may develop into sarcoma, but the sarcoma is of a fairly low grade of malignancy, and the prognosis is good on that account. The only treatment for these tumors is surgical excision; X-ray and radium are of no value. The indications for removal are painful tumors, deformity due to the size or the position of the tumor, and cosmetic reasons, particularly when the tumor is on the face. Occasionally plastic surgery is needed for the removal of these growths. Sometimes it is necessary to draw the skin in from the neighboring parts in order to get enough to cover the area left after excision. In 1918 Ludwig Keney, a German, reported successful results following hypodermic injections of fibrolysin. There seems to be very little in the literature, however, to confirm this.

I was certainly very much interested in Dr. Goodwin's report, and some of the cases he showed are among the most unusual I have seen in going through the literature.

BILE PERITONITIS.*

By FRANK HELVESTINE, JR., M. D., Roanoke, Va.

The oldest investigation of the reaction of the peritoneum to bile is probably that of Bohn,[2] published in 1755. Using dogs in his experiments and removing the gall-bladder with and without ligation of the cystic duct, he concluded from his results that gall-bladder injuries were usually fatal because bile escaped into the peritoneal cavity.

Ehrhardt[7] in 1902 investigated the resorption and toxicity of bile when introduced into the peritoneal cavity of dogs and cats. He cut through the choledochus of these animals to form a continuous secreting biliary fistula. The fact that perforation of the bile passages sooner or later leads to jaundice had already been noted and called by Kehr and Edler[13] "resorption jaundice." This appearance of icterus was considered a proof that bile was actually resorbed from the peritoneal cavity. Twenty-four hours following operation Ehrhardt noted jaundice in his animals which increased slowly not reaching a maximum until death which occurred in from two to six days. Convulsions preceded death in all cases and there was usually marked evidence of pain. Bacteriological examinations of the abdominal cavity of these experimental animals showed the contained bile to be sterile.

Working with rabbits, Noetzel[16] found that after an aseptic laparotomy if the gall-bladder be incised and left to drain into the free peritoneal cavity, after which the abdominal cavity be tightly closed, the animal regularly survived the experiment. Fraenkel and Krause[9] injected bile into the peritoneal cavity of experimental animals (guinea pigs and dogs) and found it well tolerated. Dogs in which they incised the gall-bladder to form an internal biliary fistula also recovered from the operation. Two to five weeks after operation these dogs were killed and at autopsy it was found that the wounds in the gall-bladder were healed or were sealed with omentum or loops of intestine. They concluded that bile introduced into the peritoneal cavity was innocuous.

Fulle,[10] using dogs and rabbits in his experiments, found that sudden flooding of the peritoneal cavity with bile, from a large incision in the gall-bladder or by the injection of bile taken directly from the gall-bladder of another animal, proved constantly fatal; while on the other hand, even larger amounts if oozing gradually from a smaller incision were borne much better, and bile pigments appeared in the urine. More recently, Wangensteen[20] found that in his experiments when a well functioning biliary fistula was established by operation, allowing bile to escape into the peritoneal cavity of dogs, death occurred in from twenty-four to forty-eight hours.

From the above experimental work it will be observed that there is a disagreement as to the significance of the introduction of sterile bile into the peritoneal cavity. Clinically there is the same disagreement.

Normal bile is sterile as shown by the work of Naunyn,[15] Dupre[6] and others. McWilliams[14] states that normal bile is tolerated fairly well and in large amounts for a long period of time by the peritoneum. Garre[11] reports a case which two months after injury was operated

*Read before the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

upon and a large amount of bile evacuated from the peritoneal cavity. The patient recovered. Hildebrandt[12] operated upon a case twenty-three days after injury and found a tear in the hepatic duct. Ricketts[18] reports twenty-eight cases of traumatic rupture of the biliary tract operated upon with a 22 per cent mortality. Courvoisier[4] collected thirty-four cases of rupture of the biliary tract caused by trauma, of which twelve recovered. In no case, however, did recovery follow without operative intervention. Amante[1] collected one hundred and one cases of traumatic rupture of the biliary passages and states that without intervention such an injury is usually fatal, due to the toxemia resulting from the absorbed bile.

On autopsy of the animals used in his experiments Ehrhardt noted a general diffuse icterus with bile in the peritoneal cavity. The serosa was glazed and shiny and there was no exudate or other inflammatory appearance. Bunting and Brown[3] have observed the pathological changes produced in rabbits after intraperitoneal injections of bile. At autopsy they found a bile stained peritoneal effusion and subcutaneous edema. There was necrosis of the fibers of the abdominal muscles. The heart was widely dilated and pale with hyaline degeneration and necrosis of the muscle fibers. There were areas of necrosis on the surface of the liver wherever bile touched it. There were areas of fat necrosis of the omentum and hemorrhagic necrosis of the pancreas. The kidneys showed signs of the toxic effects of the bile. They were markedly congested with scattered minute hemorrhages. The tubular epithelium showed degeneration and necrosis and within the lumina of the tubules there were casts and hemoglobin. Fulle states that the adrenals seem to suffer first and to a great extent from the toxic action of the gall-bladder bile.

Investigating the effects of bile when introduced into the peritoneal cavity, the following experiments* were carried out. Biliary fistulae were formed in two cats and a rabbit by opening the fundus of the gall-bladder in the cats and in the rabbit by removal of the gall-bladder without ligation of the cystic duct. All of these animals died within seven days after operation. A series of three rabbits were injected intra-peritoneally with sterile bile. These injections were uniformly fatal, causing death within five days. A series of twelve guinea pigs were also injected intraperitoneally with sterile bile and all but one pig died within twelve hours after injection.

Summarizing the results of the experiments reported above, it was found that bile introduced into the peritoneal cavity had a toxic effect upon the experimental animal and that in the majority of cases this toxicity proved fatal. The chief symptoms observed included lethargy, anorexia, diarrhea, and rapid respiration. The sclerotics were bile tinged at varying intervals before death. The parenchymatous viscera of the abdomen showed definite pathological changes. The liver showed areas of necrosis where its surface had been in contact with bile, and the cells of the central portion of the organ showed milder degenerative changes. The kidneys showed the picture of acute nephritis. Marked degenerative changes had taken place in the tubular epithelium, the glomeruli were swollen, casts were present in the tubules and the whole organ was congested. The cortical cells of the adrenal also showed various degrees of degeneration. The bile appeared to cause no inflammatory reaction of the peritoneum.

A second group of experiments were performed to determine if the toxic effect produced by the bile is in proportion to the amount of bile introduced into the peritoneal cavity. For these experiments three series of four guinea pigs each were used. In each series the pigs received an intra-peritoneal injection of 2 c.c., 4 c.c., 5 c.c., and 6 c.c. of bile, respectively. Two of the three pigs injected with 2 c.c. of bile died and the other survived. There was a variance in the toxic effect and the time of death caused by this small dose. The three animals injected with 4 c.c. of bile died in the average time of nine hours and fifty-seven minutes; the three animals injected with 5 c.c. of bile died in the average time of six hours and thirty-eight minutes, while the remaining three pigs which had been injected with 6 c.c. of bile died in the average time of six hours and forty minutes.

It would seem from the above that the toxic effect of bile is in proportion within certain limits to the amount introduced intra-peritoneally. However, after a certain amount has been introduced any additional amount does not seem to increase the toxicity. This is perhaps because the peritoneum can only absorb

*These experiments were carried out in the laboratory of the Pathological Department of the University of Virginia, 1922-1923.

at a certain rate regardless of the amount of absorbable substance present.

In another group of experiments it was proposed to determine if there was any difference in the toxicity between gall-bladder bile and duct bile. Rous and McMasters[19] have shown that the ducts and gall-bladder exert opposite influences upon the bile. The ducts fail to concentrate and thicken it with mucus as the gall-bladder does, but dilute it slightly with a thin secretion of their own which is colorless and devoid of cholates. Three guinea pigs were each injected intra-peritoneally with 5 c.c. of bile obtained from the gall-bladder of a calf, and a second series of three guinea pigs were injected with the same amount of bile taken from the hepatic duct. The animals injected with duct bile died in the average time of six hours and fifty-five minutes, while in those injected with gall-bladder bile death occurred in the average time of six hours and ten minutes. This difference of forty-five minutes is too small to be held significant when the variable factors entering into such experiments are considered.

Lastly, it was attempted to determine the time required for the absorption of bile from the peritoneal cavity and its appearance in the urine. Three rabbits were operated upon and a small rubber tube sutured into the fundus of the urinary bladder. From five to seven days were allowed from the time of operation for the recovery of the animal and then bile was injected intra-peritoneally and specimens of urine collected at half hour intervals. All animals survived these injections and were re-injected after an interval of three days and specimens of urine were again obtained. These urinary specimens were tested for bile (Gmelin test) and it was found that the specimens obtained from three to three and a half hours after injection gave positive tests.

In all of the experiments the sterility of the bile used was tested bacteriologically.

Discussion

From the above experiments it is seen that sterile bile when introduced into the peritoneal cavity of the usual experimental animals has a definite toxic effect due rather to its absorption than any inflammatory effect that it may have on the peritoneum. There appears to be no difference in the toxicity of duct bile and the concentrated bile from the gall-bladder. In each experimental animal the peritoneum after being in contact with bile remained smooth and glistening, and there was no evidence of an exudate. The parenchymatous organs showed a very definite pathology but not of the degree described by Bunting and Brown. Fulle in his experiments noted especially the degenerative changes in the adrenals, and in my experiments these changes were also marked. Crile[5] has shown that the introduction of a toxic material into the body of a decapitated animal produced no effect on the adrenal. This observation would further substantiate the hypothesis that the toxic effect of bile is produced by its absorption from the peritoneal cavity.

The toxicity manifested is in direct proportion to the amount of bile introduced into the peritoneal cavity at one time until a certain limit is reached after which any additional amount does not increase this effect. A saturation point as it were is reached, probably due to the absorption rate of the peritoneum being a constant factor, so that only a given amount of absorbable material could be taken up in a given time.

Experiments showed that bile was absorbed from the peritoneal cavity and appeared in the urine in from three to three and a half hours. The urine contains bile many hours before there is notable jaundice, and also some time before enough bile could be absorbed to cause a slowing of the pulse as described by Finisterer.[8] Dr. Stephen H. Watts, of the University of Virginia, has observed several clinical cases of perforation of the gall-bladder in which bile appeared in the urine, and considers this a very suggestive sign in the diagnosis of rupture in a hitherto unjaundiced patient with gall-bladder disease.

The difference in the degree of the toxicity of bile in the free peritoneal cavity found clinically and experimentally is explained by Wangensteen as due to the great amount of taurocholic acid found in the bile of lower animals. Quincke and Hoppe-Seyler[17] have shown that among the common laboratory animals the rabbit and guinea pig respectively secrete nearly seven and eight times as much as the dog, and ten and twelve times as much bile as the cat. Man's rate of secretion places him nearer the last mentioned animals. This difference in the rate of bile secretion may also be a factor in the difference seen in the clinical and experimental results. Wangensteen, however, concludes from his review of the

literature that the escape of any considerable amount of bile into the abdominal cavity of man unless removed by operative intervention is always fatal.

SUMMARY

1. Sterile bile when introduced into the peritoneal cavity has a definite toxic effect on the organism. The principal pathological lesions are seen in the parenchymatous organs of the abdomen. No peritoneal reaction is produced and the toxicity of the bile is due to its absorption.

2. The toxic effects produced by sterile bile introduced into the peritoneal cavity are in proportion to the amount of bile within certain limits. After a certain amount has been introduced the maximum toxic effect is obtained and larger amounts do not alter the pathological picture. There is no difference in the toxicity of gall-bladder bile and duct bile. Bile is absorbed from the peritoneal cavity and appears in the urine in from three to three and a half hours.

REFERENCES.

1. Amante, 1912 (cited by Wangensteen).
2. Bohn, 1755 (cited by Rost; The Pathological Physiology of Surgical Diseases, 1923). Blakiston's Son & Co., Phila.
3. Bunting, C. H., and Brown, W. H., 1911, *Jour. Exp. Med.*, Vol. 14, p. 445.
4. Courvoisier, L. G. 1890 (cited by Wangensteen).
5. Crile, G. W., 1924, *Arch. Surgery*, Vol. 8, No. 2, p. 557.
6. Dupre (cited by Thebault, L. M. M., Contribution a l'etude des ruptures spontanees de voies biliaires dans le peritoine, Paris, Rennes, 1912, F. Simon, 162 p. 80).
7. Ehrhardt, 1902. *Arch. f. klin. Chir.*, Hft. 2.
8. Finisterer (cited by Neuber, E., *Deutsch. Med. Wchschr.*, 1921. Hft. 47 S. 1027).
9. Fraenkel, E., and Krause, P., 1899 (cited by Wangensteen).
10. Fulle, C. B. C., 1921. *Archivio Italiano di Churirgia.* Vol. 4, No. 3, p. 299.
11. Garre (cited by McWilliams).
12. Hildebrandt (cited by McWilliams).
13. Kehr and Edler (cited by von Arx; Correspondenz—*Blatt. f. Sweizer Aertze*, 1902, Hft. 32, No. 19, S. 585).
14. McWilliams, C. A., 1912. *Ann. Surg.*, Vol. 55, p. 235.
15. Naunyn (cited by von Arx).
16. Noetzel, 1909, *Verhandlungen der deutsch. Gesell. f. Chir.*, S. 701.
17. Quincke and Hoppe-Seyler (cited by Rous and Larimore: *Jour. Exp. Med.*, 1920, Vol. 32, p. 249).
18. Ricketts: 1905. *St. Louis Med. Review.* Vols. 51 and 52.
19. Rous and McMasters: 1921. *Jour. Exp. Med.*, Vol. 34, p. 47.
20. Wangensteen, O. H.: 1926. *Ann Surgery*, Vol. 84, No. 5, p. 691.

612-613 *MacBain Building.*

THE IMPORTANCE OF DIFFERENTIATING ABDOMINAL SYMPTOMS IN SOME CASES OF ANGINA PECTORIS FROM UPPER ABDOMINAL SURGICAL LESIONS, ESPECIALLY CHOLECYSTITIS.*

By A. MURAT WILLIS, M. D., F. A. C. S., Richmond, Va.

An acute pancreatitis, high intestinal obstruction, the perforation of an ulcer or of the gall-bladder; such accidents create emergencies necessitating immediate surgical intervention in order to save the life of the patient. Unfortunately, even by the most careful study and the utilization of every diagnostic aid, it is sometimes impossible to determine which one of these conditions is actually present, and the surgeon may be chagrined on opening the abdomen with the expectation of encountering one, only to discover that another really exists. While such an experience may lessen the operator's self-esteem, it in no way exerts an unfavorable influence on the prognosis, because a laparotomy would have been necessary in any event. Far different, however, is the case when an operation of this nature is undertaken for the treatment of a supposed surgical lesion of the upper abdomen and the subsequent course of events discloses that the cause of the symptoms lays in a disturbance of the circulatory apparatus; here, not only does the operation fail to afford relief but it renders the chances of recovery distinctly less bright.

It is well known that disease of the heart or the intimately associated vessels may produce attacks of severe pain. According to Ranson (The Cardiac Nerves in Angina Pectoris; *Am. Heart Journal;* Vol. 1; p. 508; 1925-26) the pain fibers from the cardiac plexus pass through the stellate, the inferior, and the middle cervical ganglia to enter the white rami of the upper three thoracic spinal nerves; to a less extent, some may enter the vagal trunk. From functional studies, Singer (Experimentelle Studien ueber die Schmerzempfindlichkeit des Herzens und der grossen Gefaesse und ihre Beziehung zur Angina Pectoris. *Wien. Arch. f. inn. Med.*, Vol. 13; p. 157; 1926) concludes that no pain fibers are present in the vagus of the dog; pain sensation being mediated solely by fibers that pass through the stellate ganglion.

In common with other viscera, the pain-sensitivity of the heart is of a low order. While we possess the ability to determine with ac-

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1928.

XUM

curacy the site of a painful stimulus applied to the surface of the body, the pain of a visceral lesion is either imperfectly localized or else referred to some definite region of the body surface. Head and Rivers have formulated the general law that the phenomenon of referred pain in visceral disease is due to the fact that afferent fibers from the affected viscus enter the same segment of the spinal cord as do fibers from a related area of the body surface; and, since the latter is much more exposed to injury, we interpret impulses coming into this segment as arising from stimuli applied to the surface. In harmony with this law, we find that heart pain is generally referred to the area of distribution of the lower cervical or upper thoracic nerves to the surface.

The mechanism for the production of cardiac pain is unknown. From clinical observations it has been learned that severe attacks of pain may, apparently, arise in a heart or adjacent vessels where post-mortem examination fails to reveal adequate cause: conversely, gross disease of these structures may exist without giving rise to pain. Obviously, experimental study of this problem must be by some indirect method. Resorting to such a procedure, Singer has concluded that the myocardium is relatively insensitive but that both the aorta and the coronary vessels, with intact adventitia, readily transmit afferent impulses. In typical attacks of angina pectoris, the pain is generally of comparatively short duration and it is unusual for it have an abdominal distribution; however, exceptions to both these statements occur. Fussell states (*Monographic Medicine;* Vol. 5; p. 430): "Cases of angina pectoris occur which have as their cardinal symptoms pain in the epigastrium." Levy (*Nelson's Loose Leaf Medicine;* Vol. 5; p. 289) says of angina pectoris: "The features of the attack are, at times, entirely abdominal." It is quite possible, therefore, that an attack of angina pectoris in the limited sense of this term may be mistaken for a surgical lesion of the abdomen.

Cardiac pain arising from embolism of a branch of the coronary arteries with resulting infarction leads to the production of a symptom-complex closely resembling that occurring in cholelithiasis, cholecystitis, especially, rupture of the gall-bladder. These conditions may occur in previously healthy individuals, generally past the fourth decade, particularly in those who have lived too well. The attack of pain comes on suddenly; it is agonizing in nature; and it may be referred to the epigastrium. Physical examination indicates the intensity of the suffering; the patient may be grayish-white; his skin covered with sweat; there may be definite rigidity and tenderness of the abdominal muscles. Some fever is generally present, and the white count rises in some instances as high as 20,000. The low blood-pressure which is present in most cases of coronary infarction may be paralleled by that seen in the collapse after rupture of an abdominal viscus. It is obvious, therefore, that a mistaken diagnosis may easily be made here where the selection of appropriate treatment is of vital importance: the slim chances for recovery in the case of the cardiac patient would be immediately removed, were he subjected to operation while, in the case of a patient with a ruptured abdominal viscus such a course alone offers any hope.

Unfortunately, the presence of cholecystitis, cholelithiasis or other surgical conditions does not confer immunity against cardio-vascular disease: an individual may very readily have gall-stones and yet experience anginal pain from a diseased heart or vessels. It is difficult to state accurately what the incidence of gall-stones is in persons past forty years of age: certainly, it is very high. In many post-mortem examinations, biliary calculi are found and yet the history indicates that they produced no severe symptoms during life. Since angina pectoris and coronary infarction occur chiefly after middle age has been attained or passed, it is apparent that a considerable proportion of these cardiac patients may be carriers of symptomless gall-stones. It is true that by operative measures we may relieve the patient of the stones, but the strain of the anesthetic and the laparotomy may so accentuate the severity of the cardiac disturbance that death ensues from this cause. Both from unfortunate experiences in my own practice and from accounts of similar catastrophes that have occurred elsewhere (Forbes: Abdominal Pain of Cardio-vascular Origin; *Northwest Medicine:* Vol. 26; p. 60; Feb., 1927), I am convinced that cardiac death occurs in our middle-aged and elderly surgical patients much more frequently than is commonly believed. The danger points in these patients are, first, during the course of the operation; second, within the

next forty-eight hours, in the period of greatest discomfort; and, finally, after the lapse of days or weeks, when the patient is gotten out of bed or subjected to some other unusual strain.

The patient suffering from embolism of a branch of the coronary arteries may present a symptom-complex almost indistinguishable from that of a surgical emergency from an upper abdominal lesion. In both conditions, there may be agonizing epigastric or even lower abdominal pain; pallor; the feeble, rapid pulse; low blood-pressure; rigidity of the abdominal muscles; fever; and leucocytosis. Fortunately, however, in most instances, coronary infarction is generally preceded by more or less marked manifestations of cardio-vascular disease; and in the actual attack, the disturbance in the heart action and the reduction of blood-pressure are greater than is the case save in the severest collapse from a surgical lesion of the abdomen.

More frequent in its occurrence and more commonly the cause of diagnostic error is the existence of cardio-vascular disease in middle-aged or elderly individuals with symptoms explainable on the basis of some abdominal lesion. Both cardiac disease and gall-stones are encountered most frequently in the later decades of life; the type of patient in whom we expect the presence of biliary calculi; "fair, fat, forty, and full of flatus" is exactly the type suffering most frequently from cardiac pathology. Of recent years, the importance of early recognition of cholecystitis with the institution of surgical therapy before the calculous stage has been stressed, and by means of a carefully elicited history of digestive disturbances and the discovery of some deviation from the usual roentgenogram, gall-bladders have been removed, to be pronounced normal by the examining pathologist. We exhaust every effort of our ingenuity in the attempt to incriminate a gall-bladder; we overlook the possibility of these obscure symptoms arising from a diseased heart; we obtain suggestive evidence of gall-bladder pathology and hasten our patients to the operating table for a condition which practically never threatens life, only to see them succumb as the result of our diagnostic error.

In recent years we have come to rely more or less on the Graham Test for determining the presence of pathology in the gall-bladder. We even go so far as to believe that the failure of the gall-bladder to fill, or delay in the emptying time, indicates disease. My experience with this test in patients with cardiac disease is limited yet I have the impression that a considerable number of normal gall-bladders fail to function properly when the test is done in the presence of heart disease. It seems possible that the greater or lesser degree of hepatic congestion which accompanies myocardial weakness may interfere with the normal distribution of the salt. It is my belief that this point should be further investigated.

Nor does the existence of gross disease of the gall-bladder always justify immediate recourse to surgery. As already pointed out, an abdominal surgical lesion confers no immunity against cardio-vascular disease; the history of repeated attacks of epigastric pain may be attributable to the diseased gall-bladder, but in the type of patient already described, it behooves us carefully to investigate the condition of the circulation, in the attempt to rule out disease of the circulatory apparatus as the actual cause of the symptoms. We are too prone to accept one diagnosis as conclusive, particularly when it fits in with our pre-conceived ideas; but in order best to serve the interests of our patients, we should exert every possible care lest we precipitate death by the performance of an operation which is, at best in most instances, relief-giving and not life-saving.

Time does not permit my reporting in detail clinical cases covering this subject. I have in my files histories illustrative of these various clinical pictures. I have cases of angina where all of the distress was abdominal and where the X-ray after the Graham Test showed delayed emptying time or absence of salt in the gall-bladder. I have cases of angina and gall-stones in which symptoms sometimes were due to one and sometimes the other. I have cases of both angina and gall-stones in which all symptoms seemed to be anginal.

In conclusion, it may be said:

1. Typical attacks of angina pectoris, short in duration and with pain referred to chest and arm should be readily recognized.

2. Coronary infarction, causing agonizing epigastric pain, rigidity of the abdominal muscles, fever, and leucocytosis closely simulates an emergency arising from a surgical lesion of the abdomen.

XUM

3. Probably most frequent in occurrence is the anginal attack in obese, middle-aged patients, with or without gall-bladder pathology, where the pain is referred to the epigastrium and is accompanied by definite tenderness in the epigastrium and under the right costal arch and the history of digestive disturbance.

Johnston-Willis Hospital.

DISCUSSION OF PAPERS BY DRS. HELVESTINE AND WILLIS.

DR. J. MORRISON HUTCHESON, Richmond: I am afraid that I can not discuss the first paper very intelligently, but I trust that someone more familiar with the subject will do so.

I have been very much interested in the subject Dr. Willis has chosen and, as I have felt that it is of great importance to surgeons, it is gratifying to hear it presented from the surgical viewpoint. In conversations with patients about their complaints and about the things doctors have told them, I am convinced that there still ex sts in the minds of the laity and of a great many physicians a distinct bias in favor of what they call indigestion, either acute or chronic, as an explanation of symptoms, particularly those that occur below the diaphragm. I collected a few years ago a considerable group of patients for whom abdominal operation had been advised and, in a number of instances, done, for the relief of symptoms that turned out to be entirely cardiac in origin. From an analysis of the histories of those patients and the steps leading up to the mistaken diagnoses, I got the general impression that most of us fail to get and to keep in mind a clear conception of the possibilities of cardiac disease and that we tend to concentrate too quickly our attention upon the locality in which the symptoms appear.

We must remember that every individual of middle life or later is a potential cardiac case, that the onset of arteriosclerotic heart disease is peculiarly insidious, that its manifestations are often extremely atypical, that the physical signs which we associate with heart disease are apt to be very slight or entirely absent. We must remember that the vast majority of patients with angina complain of gas and belching that gives momentary relief and that this symptom is part of the angina, produced by the same mechanism by which the pain is produced, and must not be looked upon as evidence of disease of the digestive organs. We must recall, also, that tenderness over the liver margin is extremely common in cardiacs and that it is a symptom which is apt to be misinterpreted if the mind of the examiner is fixed on the gall bladder. We must keep in mind that fever and leucocytosis are the rule in acute coronary occlusion and that they must not be regarded as evidence of inflammatory disease below the diaphragm.

X-ray studies, while of great value, must be applied with conservatism when we undertake to differentiate between angina and gall-bladder disease as a cause of upper abdominal pain. In the series of cases to which I referred, X-ray examinations of the gastro-intestinal tract and the Graham test on the gall-bladder had been done a number of times. In five of those cases it appeared that the X-ray findings, or rather the faith that was put in the X-ray findings alone, were the principal cause of error. As an example, an individual has a pain which is for the most part below the diaphragm. He is apt to state that he has pain in his stomach or that he has indigestion, acute or chronic. Without a very careful or painstaking history he is referred to the X-ray man for diagnosis; the X-ray man finds a sign that suggests gall-bladder disease, and that ends the matter. I agree with Dr. Willis that the subject of the Graham test in patients with probable passive congestion in the liver needs further study. Even though gall stones be present, heart disease may also be present and constitute a much more serious situation.

DR. W. H. GOODWIN, University, (being asked by the President to discuss the papers):—Mr. President and fellows of the Society, I am sorry I got in a little late to hear Dr. Helvestine's paper. I know it was very interesting, but he was just about to close when I came in. I have had no experience with peritonitis caused by bile, but I feel there is a great need for drainage when we have operated on the biliary tract. Some people seem to feel safe in tying off the cystic duct and not draining, but the pressure in the biliary tract is increased after the gall-bladder is removed and I always feel safer in putting in a small drain to the cystic duct. I recently saw an article by someone whose name I do not recall, in which it was stated that it is extremely dangerous to leave a detached piece of liver in the biliary tract. Had I known that I should be called upon for this discussion, I would have made a note of the name of the author.

I was extremely interested in Dr. Willis's paper and agree with everything he says, particularly that we should be very careful in selecting the cases upon which we operate and particularly those of middle age and beyond. I suspect it might be better to operate on those cases and find they are cardiac cases rather than not to operate on an acute appendix, perforated peptic ulcer or acute gall-bladder.

DR. MURAT WILLIS, closing the discussion: In my clinical experience I have not had as much difficulty in differentiating acute upper abdominal conditions from angina pectoris with abdominal symptoms as I have the mild recurring attacks of angina from chronic cholecystitis. In spite of the fact that this condition is constantly borne in mind in certain types of cases, we have seen the mistake made. The most important thing for us to remember is that the patient can be the victim of two conditions and, because one has a definite gall-bladder disease, does not exclude the more important disease of the heart.

CARCINOMA IN LYMPH GLANDS OF THE GROIN WITH NO EVIDENCE OF PRIMARY TUMOR.*

By R. D. GLASSER, M. D., Norfolk, Va.

The literature is meager on this subject. So far as I can ascertain there has been no primary carcinoma of the inguinal glands reported, nor have I been able to find in the literature reports of any case similar to this one, so I have made reference to recognized authorities, whose opinions I shall quote briefly.

Dr. J. Shelton Horsley, of Richmond, Va., in *Annals of Surgery*, 1925, reports unusual new growths in the region of the inguinal

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

canal. He states that in one of his cases the gross appearance as well as the histologic structure suggested the possibility of a cystic adenomatous tumor, which he thought might have been derived from the remnants of the meso-nephric duct, but further examination showed the growth to be an unusual change in the histology of a lipoma. He also states that lipomas in the inguinal canal and along the spermatic cord are very common. In a letter recently received from Dr. Horsley, in response to a request for information regarding primary carcinoma of the inguinal glands, he writes me as follows: "I hardly know where you can find any literature on primary cancer of the inguinal gland. Of course, as you know, this would have to come from some dermoid, as there is no epithelial tissue normally in the inguinal canal."

Dr. J. H. Weeks, of the Surgical Clinic and Research Institute of the Lankenau Hospital, Philadelphia, reports a case of Sarcoma of the Rectum, in *Surgery, Gynecology and Obstetrics*, April, 1927. He states that the inguinal glands are never enlarged in sarcoma, but they may be in carcinoma of the rectum.

In a personal communication from Dr. A. C. Broders, of Mayo Clinic, is the following: "I have never heard of a case of primary carcinoma of the inguinal glands. It is possible that you are dealing with a primary endothelioma and even this neoplasm is extremely rare in the inguinal lymph nodes. You had better examine your patient closely in order to rule out a small melanoepithelioma of the thigh, leg or sole of foot, also cancer of prostate, or bladder."

In response to a similar request, Dr. S. W. Budd, of McGuire Clinic, Richmond, Va., says that the only two types of malignancy that originate in a lymph node are an endothelioma or a sarcoma. A carcinoma must be brought from some other part of the body. In his opinion, there is no such condition, as primary carcinoma of lymph nodes.

In a communication July 6, 1927, Dr. Francis Carter Wood, of the Institute of Cancer Research, Columbia University, states the following: "I know of no records of a primary carcinoma of the inguinal nodes"; and in a personal letter July 30th: after examining the section, he writes as follows: "It is probably not from the intestinal mucous membrane and also probably not from the testicle. It could be from a mole. Perhaps the little scar which you found on his leg may have been some mole which was cut off, concerning which the patient did not tell you. I have seen a number of cases of that sort, very small non-pigmented moles on the sole of the foot, or between the toes, or on the calf of the leg give rise to metastases in the inguinal nodes. The cells of this tumor could perfectly well be of this type. On the other hand, it is possible that it is a primary tumor of the nodes themselves, a growth which has been termed 'primary endothelioma of the nodes.' It is very rare; the only case I have seen has been from the cervical nodes, and there is always a doubt about the diagnosis until an autopsy on the patient has shown that there is no source of tumor elsewhere."

A section was sent to the Chicago Laboratory, pathological department, and report from Dr. Arkin is as follows: "Sections from the tumor of the right groin show a lymph node with extensive carcinoma metastases. Only a small portion of lymph gland tissue remains. The greater part of the mass consists of solid masses of cells, round, oval and polyhedral, supported on very thin connective tissue septa. The cells in some areas are arranged in long cords, two or three cells in width, in other areas they are large solid masses with extensive necrosis. The structure of the tumor metastases is strongly suggestive of certain malignant tumors of the testis, such as the malignant embryoma. Abnormal mitotic figures are frequent in the tumor cells. It is interesting that these malignant tumors of the testis bear a close similarity histologically to the malignant hypernephroma of the kidney and adrenal, all being derived from the pro-, meso-, and metanephros. Metastatic carcinoma of inguinal gland, the primary site probably in the testis."

From these opinions I can draw the conclusion that the tissue is certainly carcinoma but its direct source not known, or rather doubtful.

I am probably too hasty in reporting this case, as sufficient time has not elapsed since this patient came under my observation. The positive pathological tissue and the prominent clinical negative findings, however, justify recording this case as being of some importance. His steady improvement is good evidence of the successful removal of the offending agent, and the persistent negative findings warrant the opinion that the gland removed last Febru-

ary is the primary seat of the disease and the gland subsequently removed is secondary. Up to the present time, we could not locate any evidence of malignancy or any other lesion in this patient. In this search, I have been assisted by local as well as out of town consultants.

Report of Case

J. H., white, male, age 32, married, one child, occupation bookkeeper. First consulted me January 26, 1927, for a lump he had noticed in his right groin about six weeks previously. Since that time it had increased in size but very little, and he could not account for this because he thought his general health was excellent. At no time did he complain of pain. His family history is unimportant except that his mother died, June, 1926, from atypical leukemia. His past history is also of very little importance. As a child he was always healthy and escaped the more serious childhood diseases. Tonsillectomy when a child, mumps at the age of fourteen, and at seventeen supposed to have had congestion of the liver and kidneys. A mild Neisserian infection about four years ago without complications. His best weight, 158 lbs., and at present 154 lbs. He had an ulcer on the middle third outer side of left leg, about seven years ago, which was troublesome for nearly a year, but finally healed by local treatment. At this time he also suffered with pains in his right shoulder joint, thought to be neuritis. He gives no history of injury, difficult or painful defecation, or rectal bleeding. Urinary symptoms entirely absent. Last August, following his mother's death, he called at my office for an health examination. This included a complete blood which proved to be entirely normal.

Physical examination showed a moderately well nourished adult, no evidence of jaundice, some pallor, and slight cyanosis of lips. Cheerful and appears to be in no discomfort or pain. Heart and lungs normal. The abdomen is soft, no tenderness or masses palpable. Gall-bladder and kidney regions negative on palpation. The spleen not felt. Liver dullness normal. A hard round mass about the size of a large English walnut, felt in the right groin, freely movable under the skin, and only tender on deep pressure. There is no evidence of any genital lesions. Rectal examination by speculum is negative and on palpation the prostate gland is practically normal. There are no other palpable enlarged glands in the other groin, axillae, neck or epitrochlear regions. His extremities are negative, except for a healed scar on his left leg and a small indurated spindle-shaped mass just palpable on upper anterior thigh, just below Poupart's line.

Laboratory Findings: Urinalysis, including Bence-Jones bodies, entirely normal. Blood Wassermann, blood sugar, and calcium normal; leucocytes, hemoglobin and red cells are entirely normal. X-ray examination shows lungs clear. No evidence of tuberculosis or malignant disease. The heart is also negative. Stomach and "Cap" and terminal ileum are negative. The cecum and ascending colon lie comparatively low in the pelvis, while the hepatic flexure is considerably deformed, the picture presented being consistent with a ptosis of the entire ascending colon and the resulting deformity of the proximal portion of the transverse colon, with adhesions about the appendicular region. No malignancy was noted, however. The appendix does not fill. While no special study was made of the liver, it is apparently normal in size. No special examination was made of the gall-bladder. Cystoscopic examination reveals a negative urethra and bladder.

He was admitted to St. Vincent's Hospital, February 18, 1927, and the gland removed under local anesthesia. It was enucleated intact. This gland was not attached to any structure of the inguinal canal. It was purely in the fatty tissue and superficial, almost directly subcutaneous. No adjacent glands felt. The wound healed primarily.

Pathological Report by Dr. M. E. Roche, St. Vincent's Hospital, February 18, 1927, follows: "Tissue consists of inguinal gland. 7x3x2 cms. encapsulated. On section cut surface, greyish translucent. Areas of necrosis here and there. Frozen section shows diffuse mass of large oval, round and polyhedral cells on single strands of stroma, many dividing cells. Type of cell suggests embryonal sarcoma of testicle. Diagnosis: Carcinoma."

Upon this information 1900 mgm. hours radium was given by Dr. E. C. S. Taliaferro, a few days later. A blood count the next day showed the red and white cells normal.

A section of this specimen was sent to Dr. Bloodgood for an opinion and the following report was received on March 11th: "Lymph

Glands — Groin — Metastatic Carcinoma. Question as to Primary Tumor." In his comment on this section, he stated that it looked more like malignant tumor of testicle, and that no lymph gland tisssue remained. The cells are morphologically more of the sarcoma type than carcinoma. If carcinoma, it is transitional of the type that could come from the urinary bladder, but not from the skin. Does not suggest a primary rectal carcinoma. Cells are not unlike the testicle, but the testicle does not always metastasize to glands of the groin.

Patient was referred to Dr. Joseph C. Bloodgood who, on March 24th, 1927, made the following report: "There is a scar in the right groin from which a gland was removed about six weeks ago in February, 1927. I have seen the section of the tissue. He had noticed the gland about two months. Patient is a white male age thirty-two. Has never noticed anything else. Both testicles are in place and normal. Has no trouble in passing water. No pain anywhere. The only thing he noticed was the gland. Feeling the abdomen—no other glands to be palpated in groin, axillae or neck. Says there is some tenderness when I handle the abdomen. I have a full note from Dr. Glasser. The blood is negative. No anemia. Urine negative. Wassermann negative. Teeth and tonsils are negative. Feeling the Groin Again and I do feel another gland beneath the scar. Patient states that he has been receiving radium treatment over the scar." In a notation attached to the report he summarized his findings: "The only thing we find is he still has glands in the right groin, and when I palpate the abdomen I get a little tenderness and here and there is a suspicious soft mass but not enough to be definite. There is a scar on his left leg from a lesion that got well without operation but by treatment, and it is hard to imagine that a malignant disease could be cured by treatment. I have never seen a primary tumor of glands of this kind. We can be quite certain that we are doing no harm by not removing the glands completely now. I would advise deep X-ray treatment over the right groin. It is a very interesting case."

In a letter received from Dr. Bloodgood dated April 15th, after viewing the X-rays in this case, made by Dr. J. W. Hunter, he writes as follows: "As I look back over the history, I find that tissue was sent me and that sections undoubtedly showed metastatic carcinoma. Examination at my office, March 24, 1927, revealed a scar where glands had been removed in February, 1927. Glands had been present two months. Has been receiving radium treatment. I could find no evidence of any primary tumor anywhere. Proctoscopic examination was negative. Only suggestive thing was a healed ulcer, middle third, outer side of leg which he had in 1920, seven years ago. It healed spontaneously. I am looking at the X-rays—stomach, colon, pelvis, hips, and lungs. I see no bone lesion. No mediastinal tumor when as a rule in lympho-sarcoma or Hodgkin's disease we have such a tumor. There is no lifting of the diaphragm suggesting a tumor of the kidney. Stomach and colon are apparently normal. There is some ptosis of the hepatic colon which could be due to a kidney tumor; but I could not feel any and there is no shadow suggesting one. We can say these prints are negative."

In April he received several 200,000 volts deep X-ray radiations. His color, strength and weight showed improvement. The fibrous mass just below operative scar was no longer felt. Early in May his general condition very well.

June 4, 1927, X-ray of pelvis and chest for probable metastases was negative. Complete blood and urine also negative. On July 5th, the enlarged area just below the operative scar which had apparently disappeared in May was again palpable, and slightly uncomfortable but not enough to prevent his daily duties. August 1st, had gained 2 lbs. and the mass took the shape of a gland. August 22nd weight about the same. No complaints, except the gland was slightly larger. September 8th re-admitted to St. Vincent's Hospital and, under gas oxygen anesthesia, a wide dissection was done. The gland about 2x1 cms. in size was found in the subcutaneous fat lying directly on the fascia. It was removed intact, with much of the adjacent fat. Careful palpation did not reveal any evidence of other glands in the immediate region. He was discharged from the hospital on the fourth day and the sutures removed on the seventh. Received deep X-ray therapy on the eighth-day. The wound healed primarily and he returned to work on the tenth day feeling unusually well. The gland was sent to Dr. Bloodgood for an opinion, and the fat examined by a local pathologist. Report

XUM

and comment from Dr. Bloodgood September 9, 1927: "The section from the gland you removed shows carcinoma of the cuboidal or transitional cell type. Sometimes it is difficult to tell this type of carcinoma from primary endothelioma or sarcoma. It is the same type as the section you sent me. Yet we could find nothing but the tumor in the groin. My old notes say no evidence of tumor elsewhere."

Report from Dr. James A. Wilkins, Norfolk, Va.: "Microscopic examination shows fat tissue is infiltrated by small irregularly rounded cells whose nuclei are rich in cromatin. Diagnosis: Metastatic carcinoma." This man was examined just a few days ago with no apparent evidence of disease or malignancy. He is improving generally and is still receiving X-ray therapy.

718 *Medical Arts Building.*

DISCUSSION.

DR. E. C. S. TALIAFERRO, Norfolk: I have seen this case with Dr. Glasser several times. Dr. Glasser has thoroughly worked this man up, from the physical examination, has X-rayed him, gone over him as thoroughly as possible, cystoscoped his bladder, etc., without any evidence of a primary growth. Of course, we all know that a primary carcinoma of the inguinal region is not rare but is impossible. I am thoroughly of the opinion that this man has a third testicle, undescended, in the abdominal cavity. As I said, Dr. Glasser has thoroughly studied this man and has been unable to find any just cause or reason for it. But there must be some cause. So far as the lesion on his leg is concerned, that occurred four or five years ago. He has a scar, but it is healed, and it is pretty far fetched that it could be the cause. I think it is secondary to an undescended abdominal testicle.

Dr. Roche, in her report, said type of cell suggests embryonal sarcoma of testicle, so one would naturally think this was a metastatic condition from the undescended testicle.

MENTAL DISEASES: VIEWED AND TREATED FROM VARIOUS ANGLES—SOME HEREDITARY FORMS REQUIRING RADICAL TREATMENT.*

By BITTLE C. KEISTER, M. D., Harrisonburg, Va.

During the past decade we find, after careful study, that the *mental side of medicine* is rapidly becoming more prominent, requiring more attention from a scientific viewpoint than ever before in the history of medicine.

Since the great World War, our country is fast becoming the dumping ground of every known or imaginable theory and cult, many of which date back to the "Dark Ages", when sorcery, witch-craft and fortune-telling were in common vogue.

Then we have the more modern so-called theories, such as Christian Science, agnosticism, modernism *versus* fundamentalism, new theory of evolution, theosophy, spiritualism, etc.

Not a day passes that we do not read of some new and untried theory and treatment for the supposed relief and cure of our many human and *physical* infirmities. And, strange to admit, some of our modern text-books on medicine, our *standard medical journals* and encyclopedias, are brimming full of these so-called theories and psuedo-sciences, such as *Abram sinuo-therapy*, physio-therapy, radio-therapy, diathermy, actino-therapy, helio-therapy, surgical diathermy, electro-coagulation, etc.

Each one of these pseudo-theories is strongly advocated and taught by certain pseudo-scientific schools, both in this country and Europe, for the relief and cure of man's physical ailments, regardless of his *mental vagaries*, which, in many instances, require the most active and skillful treatment from a skilled physician.

Strange as it may seem, we rarely see or read of any authentic treatment or treatise pertaining to the many diseases and abnormalities of the mind. We read our medical journals, some of which give fine articles pertaining to psychology and nervous diseases, mental hygiene, etc., but we get very little information outside of our actual experience.

A very eminent pathologist has recently discovered that "*bad temper*" alone has the effect of increasing the amount of sugar in the blood from 10 to 30 per cent in the course of a few minutes, causing an angry person to fight the object of his rage. He becomes hot-blooded from the intoxication of the carboraceous material in the brain and muscular system, due in part to a derangement of a certain tiny gland, about the size of a pin. When this little gland functions normally, the person remains calm and even-tempered, but if it exudes its essence (colloid) too lavishly, hatred, passion and quarrels ensue.

Dr. Wm. Star Myres, Princeton, University, deliberately states that:

"Out of our 105 million people of the United States, 45 million have only the mental capacity of a thirteen year old youth, while fifteen million possess only the mental force of an eight year old child, and of the remaining 45

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

million, statistics show that 25 million are classed with the mediocre, while 5 million are classed as 'A' in mentality, and the remaining 15 million are classed as 'B' in mentality; the two latter classes do the entire mental work of our country. According to statistics, we have in the United States 60 million morons."

In view of these humiliating facts, should we not, as a profession, begin to take cognizance of the fact that we are not placing enough stress on mental diseases and their prevention? When we realize the close relation of the mental to the physical, and the adaptability of the nervous system, its possibilities in degree of organization, and appreciate that the nervous tissue is the most delicate in the body, and possesses so little reparative power, we may wonder that it can at all be in a healthy state.

When we consider that it is upon the perfect integrity of the fine adjustments of this slender and intricate organization that the healthy functional action of every other tissue of the body, even to that of the most insignficant secreting gland, depends, we are enabled to estimate the extent to which our physical as well as our mental well-being is under its control. To increase this marvelous significance, we have only to learn that Nature has seen fit to make what has been termed the "master tissues" of the body, the brain and spinal cord, dependent for their own vitality upon the blood supply which comes to them through arteries which, for the most part, are what are called end-arteries. Such arteries have no communication with one another, a plan which means almost inevitable death to these parts when the arteries break down or become occluded. (Courtney).

By careful study we have learned in this cursory way something of the wonderful mechanism of the human brain, its adaptations as well as the risk from its impaired usefulness. Let us, then, study more vigorously how its hygienic conditions may be preserved and its greater efficiency secured.

In this brief review on this important subject, we may consider three chief factors,—heredity, environment and education. In late years not so much influence has been attributed to the dark side of the question of heredity as the fatalists of former generations gave it. The great change that environment and education may bring about in the individual has become recognized and has assumed larger proportions. We are aware, however, that the passions and appetites are much keener and more difficult to control in those who inherit them from a line of ancestry who have never checked them, but in whom vice has been accounted a glory and a virtue.

It is much easier for some who inherit a placid, even temperament, with no strong emotions, to be outwardly virtuous and orderly, than for those just mentioned; but all have it in their power to choose the right, provided their early home training has not been omitted. Habitual selfishnesss, disregard for the rights or feelings of others and gross immorality long indulged in may reduce one nearly to the level of the brute; the vicious act may seem to be due to irresistible impulse, but the perpetrator is none the less culpable. He who willingly intoxicates himself that he may commit murder is still a murderer, and one of the deepest dye of criminals. Life to all is a warfare; to some it is much more severe than to others. None are born with a constitution incapable of virtue, though many are drifting with the current wholly oblivious of their environment. One of the encouraging features in the problem of preventing diseases of the mental faculties in the young and immature child is proper environment. However much the child may have been hampered through his parent's ignorance, or through inherited weakness, the surroundings of life will have a great and lasting effect upon his mental condition. Unlimited wealth and foreign travel are not necessary for his well-being. Favorable home surroundings, where sympathetic natures guide the family life, where sharp criticism and heartless fault-finding are unknown, have much to do in the formation of character and the prevention of mental abnormalities in the young and maturing minds. Where the training of the earlier years is regarded as a sacred trust, though mistakes be made, the after-memory clings with a most tenacious hold, and the motives and impressions then installed are longest lived. These home impressions have much to do with our highest ideals and success in any position in our after-career. Many of our greatest minds owe their success to the home impressions made in childhood by a consecrated mother or father, while, on the other hand, where unfavorable environments harass and annoy at a time when the young mind should be relieved from care, or where there

XUM

has been a continual drumming daily on the "mental strings," they will sooner or later become fragile and finally break, causing mental deterioration, such as brain-storm, etc.

At this special period of life the young are more susceptible to vague impressions, and unless special precautions are interposed by parents or guardians mental deterioration in the form of dementia praecox may ensue. This is a disease of early life and a dementing process from the beginning. As school children, some of these patients are bright and receptive, learn easily, are responsive, and show quick, nervous reaction and impressionability. Others have difficulty in keeping up with their classes. While perception and memory are good, reasoning and judgment are not correspondingly developed. They are erratic and lacking in inhibitory control. They are subject to headache and, if pressed, break down in school work. They undergo attacks of dreamy abstraction and find it difficult to concentrate the attention. In some instances erraticism goes over by imperceptible degrees into pronounced mental perturbation. In others there is a sudden change from the habitual states of feeling and acting. This may appear coincident when the boy becomes a man or the girl a woman. It may be that the determining cause is a fever, an injury, or some shock to the nervous system. Symptoms of acute depression or excitement may occur, followed by a characteristic train of symptoms, and of which there are three special classes recognized, the *hebephrenic*, the *katatonic*, and the *paranoid*.

In the hebephrenic form the patient develops a state of reserve, shyness of strangers, and depression, is easily embarrassed, shuns company, is deeply religious, devotes himself to Bible study, is fussy in dress, spends much time in the bathroom and over toilet operations, is addicted to self-abuse, etc. Later in the disease he becomes bombastic, self-assertive and egotistic. He falls into a state of brooding, consults various physicians, reads quack advertisements, becomes concerned about his bodily state and the loss of virility. Delusions of a religious character develop, and he may imagine himself a second Christ.

The second form, the katatonic, has much in common with the hebephrenic. The distinction between them is based largely upon the predominance in the katatonic form of stupidity, states, and a muscular rigidity, negativism, contrariness in conduct, imitativeness and automatism. These patients resist attentions in bathing and dressing as well as the proper care of the person. They complain of being light-headed and of the baneful influence of certain other people. With the many other katatonic manifestations, but more pronounced, there is increased apathy and stupor, besides being unmindful of the functions of the bladder and bowels, which may be arrested voluntarily by his own volition. Many of these conditions are regarded as arising from perverted sexuality.

The paranoid form of this disease has much in common with the hebrephrenic as well as the katatonic forms. The predominant note in theses cases is of egotism and boastfulness. The patient believes himself created for some special mission, to reform society, to promulgate new rules for dress and living. He may believe himself of royal birth and parentage. Impulsive acts of violence may occur at any time when least expected, and he may become dangerous.

These are but a few of the many abnormal conditions that we may observe in this class of mental diseases which take their origin from early childhood, and might have been prevented to a large extent if early and proper training were instituted with a thorough proper course of treatment. In the early beginning of treatment for dementia praecox and the various symptomatic divisions, we must take time by the forelock, beginning with the very onset of symptoms, keeping the patient quiet and away from the outside world for an indefinite time, administering proper nervines, tepid and cold shower baths daily, omitting school-life for at least six months or a year, using only such medicines as reconstructives and nervines, coupled with a full supply of nutritious and healthful diet, fruits, etc.

Strange as it may seem, many of our mental diseases in both childhood and adult life may take their origin from very slight causes, such as a high fever from a protracted disease, like typhoid, tuberculosis, pellagra, uremia, diabetes, influenza, etc. Then we have certain drugs that produce mental wandering, mental imbalance, and, if long indulged in, we may have a mild form of mania bordering on maniac-depressive insanity. Hyosine, cocaine, morphine, etc., and all alcoholic drinks possess

narcotic properties capable of setting up various degrees of brain poisons and mental aberration. Then we have gas poison and World War shocks, trench poison, etc., as amply demonstrated by some of our dough-boys in our government hospitals, whose mental capacity has deteriorated to even that of a twelve year old boy. This is but a common or daily observation to the writer, he having been located near and having access to the great Walter Reed Hospital.

Institutional and vocational treatment, with all that pertains to the welfare and happiness of these unfortunate soldier boys, is being done in a most lavish and commendable way throughout our country. But it seems to me, after much observation in the various municipal and private institutions for mental diseases of both this and other countries, we need more of the *personal humane* feature to predominate the atmosphere of such institutions. As stated in the outset of this paper, the delicate and intricate organization of the nervous system, as furnished and made to function through the central powers of the brain and spinal cord, it is but natural that none but the most thoroughly read and competent experts on mental diseases should be allowed to preside over these institutions and treat the unfortunate victims, many of whom, instead of growing daily worse under unfavorable environment and unsuitable treatment, should in due time regain their normal state. Our past regime in the treatment of these patients has been a reflection and a disgrace on the United States Government, if you will pardon the expression. It is also a burning shame on any state government to allow our hopelessly insane, much less our curable cases of mental disease, to be placed in jail or bound in ropes temporarily, or until a commission of lunacy is appointed and permanent arrangements made for the transmission of the patient to an asylum for the insane. This part of my subject is only partially treated, as space will not permit further comments.

In summing up the various causes of mental diseases, their prevention and cure, as cursorily touched upon in this paper, we have scarcely broached the subject.

In the world's present state of mental unrest in both church and state, supervening upon the world's greatest of all wars, viewing it in all of its sad and heart-rending phases, including the loss of friends and loved ones, homes, etc., and the estrangement of family ties in divorce suits and the like, it is no wonder that mental deterioration is manifesting itself in the world-wide unrest.

Of the 867,420 applicants as volunteers for the World War who were rejected on account of physical and mental disability, over 50 per cent of these applicants were rejected on account of *mental deficiency*, not including illiteracy. According to statistics, in the year 1918 there were in the United States 239,820 insane persons; one-eighth of our population is of foreign birth, and one-third of the insanity of the United States is among the foreign born. According to Dr. Howard Chase, a writer and author on *Mental Medicine*, "mental diseases and insanity are on the rapid increase in the United States." The promiscuous intermingling of races and intermarrying, regardless of the laws of eugenics, and the common intermingling of the sexes with joy-rides at the seashore resorts, etc., with their usual outcome or sequel of divorce suits, which in the end constitute one of the prime causes of mental worry and anxiety, all produce a loss of nerve and brain force, as well as a loss of healthfulness of both mind and body, as does no other agency. Thousands of lives are today doomed to such an existence. Even in the conservative State of Old Virginia we had over 2,900 divorce suits last year, while in one or two other states in the Union there were as many as 4,000 divorce suits in a single year.

Taking a liberal and broad view of the present situation of the prevailing conditions existing throughout the country, the unrest of the nations, the many and varied conspiracies to undermine both church and state, political scandal and rivalry, antagonism bewteen capital and labor, illiteracy and superstition, Bolshevikism, Communism, etc.; these, with some of the modern heresies that are being broadcasted by so-called educated visionaries, have a most wonderful influence for evil over the minds of the young. The tendency toward mental deterioration and insanity is rapidly showing itself in many and various ways. This unfortunate state of world-wide human conditions only emphasizes the importance of the medical profession tendering it "good offices" to the U. S. Government, both State and Federal, toward the prevention and cure of a large per cent of mental diseases, which, if

XUM

not properly treated, will finally terminate in hopeless insanity to both the patient and his posterity.

Aside from vicious environmental conditions, we know that tainted heredity from all causes is responsible for the direct inheritance of, and the diathesis to, such mental and neuropathic diseases as the maniac-depressive psychoses, dementia praecox, epilepsy, imbecility, idiocy, feeble-mindedness, Huntington's chorea, Friedreich's disease, Thompson's familial tremors, muscular atrophies and dystrophy, multitple sclerosis, cerebral hemorrhage, arteriosclerosis, the neuropathic constitution, as well as the diathesis to tuberculosis, syphilitic taints, heart diseases, eye defects, kidney diseases, skin diseases, etc., as also cases of alcoholism and certain classes of explosive or impulsive persons who find it impossible to control their impulse and animal instincts.

Some of our ablest investigators and thinkers along these lines have concluded that while race impairment is appalling and preventable, the day and time is rapidly approaching when *more radical steps* should be taken for the prevention and cure of many of the *social evils* prevalent in our country. To prevent the propagation of the grossly unfit, such as the confirmed, habitual criminal, rapist, certain defectives, degenerates, feeble-minded, etc., I am of the opinion that the worst of these degenerates, who cannot be effectively and constantly segregated, should come within the laws enacted by the States of California, Iowa, Indiana, Connecticut and other states of the Union, requring the *sterilization* of both men and women of these classes, under conditions that safeguard their personal and constitutional rights. That these laws, drastic as they may seem, are not considered inhuman or cruel by those to whom they apply, is evidenced by the fact that individuals not coming strictly within the provisions of these laws have, as is recorded in the State of Iowa, requested that they be sterilized by the operation of vasectomy in the male, and by removing and tying off of a portion of the Fallopian tubes in the case of the female.

One of the most urgent reforms in the direction of segregation is better regulation by the local and state boards of health for following up of those suffering from chronic alcoholism and those victims of the narcotic dope habit. "We have in the United States over one million drug addicts at this time, and over 500,000 defectives in intellect, hearing and vision, 2,000,000 in hospitals and homes for the sick, 100,000 in reformatories, and an equal number in prisons, many for life, making approximately 4,000,000 dependents in the United States to be cared for by institutions of charity and the government. In view of the above mentioned conditions, can we define ours as a truly enlightened, highly civilized and efficient nation, in which one person in about every sixteen and one-half must be classed as inefficient, defective or dependent?" (Hon. Jno. J. Kindred, M. D., *J. A. M. A.*)

According to statistics, one-tenth of the women of the world bear all the children that are born; and appreciating the well-accepted idea of the influence of environment and training, how shall we nurture, protect and develop the approximate one-tenth of the human species that bear all the children, who are to become the parents of the future race and nations? These astounding facts and figures are strong enough to convince any thinking mind that, as a nation of the Anglo-Saxon race, we are living ahead of our day, ahead of our generation, ahead of our forefathers. We need to take an inventory of our past history in order to find ourselves, and learn what epoch or era we have arrived at.

A retrospective of our ancestry may enlighten us along certain lines. If we get back to the days of Abraham Lincoln, Zachary Taylor, Andrew Jackson, and others, whose ancestors were of the plain, pure and honest type, rugged, hard-headed, with little college education and scarcely any of the modern society privileges, history shows that these plain pioneers of their respective callings did honor to their country and to themselves. In this rapid-going age we need more of this rugged, honest type of men to guide the ship of state.

"More might be said hereof to make a proof,
Yet more to say were more than is enough."

DISCUSSION.

DR. R. L. RAIFORD, Franklin: The good writer of this paper has conferred on me the honor of opening the discussion, which it is always desired should be free, full and constructive. I agree with him that we are not doing enough for our mental unfortunates. This is true not only as the subject relates itself to our state and private institutional work, but from the very inception of mental symptoms.

In this advanced age of medical enlightenment we must learn to recognize and begin treating the

future mental case during its premental history, just as we treat tuberculosis and cancer. In other words, let prevention, in so far as it is possible, be our slogan in the treatment of this dread malady.

The older method of treatment from the psychiatrists and psychoanalysts standpoint is fine, in so far as it goes, but some of us feel that it often stops short of the essential part of what it is possible to do in these cases. Perhaps it may not seem in good taste for me to make so bold a criticism, but with all deference to those who differ from me, I am thoroughly convinced, both by observation and experience, that we are making at least two serious errors in the treatment of our mentally incompetent:

First.—In spite of the fact that in practically every other instance the word "idiopathic" as an etiologic description of disease has long since been discarded, we still insist that in the case of certain mental disorders the natural laws of cause and effect simply run amuck, that the wheels of progress turn backward for this special ailment, that the once smoothest running piece of machinery yet known to mankind simply gets "cranky" and will not function properly and, presto, we have a well-developed case of dementia praecox, manic depressive or what not that is essentially "functional," or "idiopathic," or, in simple language, we have an effect without a cause. Gentlemen, "there ain't no such animal."

Second.—The first error in which we find ourselves naturally paves the way to the second,—that of throwing up our hands, so to speak, as to a real constructive line of treatment for these unfortunates. For, if we accept the well-known dictum that we cannot intelligently treat a disease until we know its cause, it does not take a Solomon to conclude that the man who occupies the unfortunate position of trying to treat a condition which he is convinced has no cause is not only working at a disadvantage, but is simply licked to start with.

I understand that all of our institutions for the care of mental cases are crowded to the limit. How can they be otherwise when such a large per cent of those admitted are doomed to be a ward on the state until "death do us part?"

We recognize the fact that certain of these cases are amenable to treatment, provided the cause is corrected. Notably among this class are the alcoholics. Why not take the same attitude towards those suffering from the toxins of our friends, "Mr. Streptococcus," or other chronic disease producing bacteria? In institutions where chronic infections are considered a cause of mental disorders, it has been fully proven that, by detoxicating these patients in addition to the usual hospital care and treatment, a much larger per cent are restored to mental and physical health and again become self-supporting individuals.

For those who insist that there is no physical cause for certain types of mental dysfunction, I would respectfully ask an explanation as to why there is such a preponderence of toxic, unhealthy appearing patients in our mental hospitals?

A more or less intimate acquaintance with the activities of the New Jersey State Hospital at Trenton, covering a period of the past five years, has convinced me that Dr. Cotton, its medical director, is blazing a trail that is going to revolutionize our attitude towards and our treatment of insane cases. He not only uses all the beneficial older methods, but, by correcting, as far as possible, all sources of chronic toxemias, has reduced the average stay in that hospital of the so-called functional cases to around thirteen weeks. And these peope go out healthy in mind and body and able to resume their former occupations. If we could make any such showing as this, our institutions would not be so crowded as they now are.

In closing, let me say that "functional" or "idiopathic" must be stricken from our etiologic vocabulary, and that to be content to admit that any disease or symptom is not based on a definite physical cause is not my ideal of scientific professional attainment.

Dr. Keister, closing the discussion: I wish to thank Dr. Raiford for his able and timely discussion on the etiology and pathology of mental diseases. These points, the writer barely touched, owing to the limited time for the discussion of the subject, which should have had at least thirty minutes instead of twenty minutes. In my judgment, this "time limit" should be changed when it comes to the reading and discussion of an important paper and subject of such world-wide importance as the "Mental Side of Medicine."

In conclusion, I wish to read the report of the Massachusetts State Commission on Mental Diseases, which was copied from the American Psychiatric Association proceedings through Dr. Neil A. Dayton, Director of the Massachusetts State Department of Mental Diseases: "The State law requires a study of all children who are three or four years behind in their studies at school, and fourteen traveling clinics are constantly at work, with the result that they found, of the first 4,040 examined, 75 per cent were deficient; 8 per cent had one or both parents mentally diseased, while 84 per cent failed to pass the first grade at school. The average age of those examined was thirteen, while the mental age was only eight years."

From the above data, we can readily see how prevalent mental diseases are among children, and how important it is for our Health Boards, not only in Virginia, but throughout the United States, to take cognizance of the situation. Let our popular Dr. Ennion G. Williams and the Board of Health of Virginia follow, as a close second, the example of our sister State of Massachusetts, in adopting this important regulation.

DEVELOPMENTS IN THE TREATMENT OF PERNICIOUS ANEMIA.

By ALEXANDER G. BROWN, Jr., M. D., Richmond, Va.

Internist Stuart Circle Hospital; Formerly Professor of Practice of Medicine, University College of Medicine; Associate Professor of Medicine, Medical College of Virginia.

Dr. Thomas Addison of Guy's Hospital, London, in 1855, first described pernicious anemia, and so it has been called Addisonian anemia. He defined it as an anemia, without discoverable cause whatever, in which there has been no previous loss of blood, no renal, splenic, miasmatic, glandular, strumous or malignant disease. From that time to the period of Osler (and, probably, no better designation may be given to the great medical era in which we of this medical generation

have lived than the Osler period, as this great clinician led the march of advance in present-day medicine and recorded it with a pen, indelibly), from Addison's time then to the time of Osler, who defined pernicious anemia as "a recurring and usually fatal anemia, caused by haemolytic agents and characterized by an embryonic type of haematopoiesis," pernicious anemia has remained etiologically an enigma and therapeutically a baffling antagonist as yet unconquered. So, it would seem that a medical gathering like this may be asked to consider what appears to be a movement of real importance when it deals with some recent development in the etiologic and therapeutic problems of pernicious anemia.

In a synoptic manner let us, for a moment, recite certain accepted items in the pathogenesis of the disease and its diagnosis. Many pages have been written upon the cause of this disease. But it may be said that if all the causes of pernicious anemia were classified they would roughly fall within the following groups:

Causes arising from dietary deficiencies, like pellagra, or beri beri;

Causes emanating from chronic sepsis, as focal infections of long standing;

Causes resulting from altered lipoid metabolism.

Recent studies by pathologists point to the bone marrow specifically, however, as the site of the primary lesions of pernicious anemia. whatever may be the prior agents at work elsewhere. Certain it is, that the abnormal blood formations emanate from bone marrow, which characterize the chief features of the blood picture.

Reliable diagnostic signs of the disease, such as the high color index, and the marked macrocytosis with its many oval and abnormal shapes; deeply stained, large macrocytes; fragmentary cells; microcytes and megaloblasts; its state of leukopenia; its diminished platelets, are derived from abnormal blood formations which may be traced from peripheral blood to bone marrow. Besides this, however, there are probably forces at work that bring about a destruction of red cells themselves. This evidence of destruction of red blood cells is evinced clinically in the patient's rather characteristic color; by an enlargement of the liver and spleen; by fever; and by progressive weakness. Laboratory evidence of blood cell destruction is also made known by the abnormal blood pigment metabolism, as denoted by an excess of urobilin. Urobilin may reach as much as 1.15 grams in twenty-four hours while a normal amount is only .15 grams.

Diagnosis

In the diagnosis of this disease it is well to keep in mind those clinical symptoms which go to make up the picture.

Mouth and Tongue.—In more than 45 per cent of cases, disagreeable sensations of the mouth and tongue are experienced. Burning of anterior half of the tongue; rawness and soreness; tenderness of tongue and mouth are felt. This group of mouth symptoms appears more or less periodically and assumes, in some cases, a position of importance in the symptomatology because of the very decided discomfort and pain suffered by the patient.

Stomach and Intestines.—Besides a loss of appetite, nausea, vomiting, and diarrhea or "loose bowels," the more or less constant association of a diminution or absence of hydrochloric acid in the stomach secretion is found. This achlorhydria is a "leading" symptom. Whether hydrochloric acid suppression is a cause or a result of the disease is a matter of discussion. But, regardless of its real relation, hydrochloric acid is conceded to be indicated in its treatment.

Brain and Spinal Cord.—Changes on postmortem are more or less uniformly found in the brain and spinal cord. In life, nervous symptoms are experienced, such as disturbances of sensation, numbness, tingling of hands and feet, and signs of changes of the spinal cord such as spastic, ataxic and paralytic phenomena.

Weight.—Many lose weight, but in pernicious anemia there is a queer preservation of the fat and a relatively small loss of weight. After all there is failure of weight with pound loss.

Color.—A striking yellow tint or lemon color to the skin is found in pernicious anemia.

Fever.—There is present in these cases a low grade of fever.

Spleen and Liver.—The spleen is enlarged. It is an intimately associated organ in the blood destruction—whether active or passive. In 40 per cent of cases the spleen is palpably enlarged. So is the liver enlarged, and as the

disease progresses these organs, together or alone, are felt on physical examination.

Blood Picture.—Upon the blood picture depends the diagnosis. What are the essentials of the blood examination? The evidence is gotten from erythrocytes or red cells. The count is of interest. No other disease, says a recent writer, so often reduces the erythrocytes below two million, but patients with red cell count below that figure may not suffer from symptoms. The count may reach a low level of 500,000. The fall from 5,000,000 to 2,000,000 may require months or a few weeks. Red cell counts in pernicious anemia can not be depended upon always to serve as a criterion of improvement or as a standard of the patient's safety. It is proper to add, that an increase of red cells is always, however, to be sought in any stage of the disease. The increased formation of healthy cells and cessation of hemolytic processes in the blood and bone marrow are the ideals of treatment to be striven for.

The hemoglobin content of the blood is interesting because it remains relatively higher than the red cell count; hence, the color index is one or above in pernicious anemia. Quantitatively, however, hemoglobin is reduced.

Abnormalities of the red cells are found in every known form except those with a definite achromia. Macrocytes stand out strikingly as characteristic of pernicious anemia. There are also found microcytes of a deep red color. The irregularity of shape is striking, some being elongated, rod like, or pyriform shaped. Stippling of the red cells is common. Nucleated red cells of all types are found; showers of blast (germ) cells are found at times, indicating an heroic effort of the marrow to regenerate new cells. There are normoblasts of average size, and megaloblasts. There may be intermediates. In certain crises of the disease, nucleated red cells appear in large numbers, and these crises are characterized by a gain in blood values.

But our main theme deals with the newer developments of treatment in pernicious anemia. In retrospect, one must concede the failure of treatment in this disease. Since the Addisonian (1855) period to the present, final prognosis under any current treatment has been bad. Arsenic in various forms, such as Fowlers' solution, atoxyl and arsphenamine have held sway. Splenectomy has had its day. Transfusion has again become the vogue with its modern improvement in technique. Repeated transfusions have been favorably used in some cases. But with all, no remedy has alone abated permanently the tendency to progressive loss of blood values and ultimate fatality.

Hydrochloric acid, alone, has remained in favor. Today as in the seventies, diluted hydrochloric acid in large doses with food, has seemed to help gastric function. The stomach, all but achylic in pernicous anemia, seems to demand large doses of this drug. It holds a prominent place particularly in dietary treatments to be mentioned later.

The value of food, in cases of pernicious anemia, had been pointed out by separate observers since 1872: but little appreciation had been given to such observations. Even meats and green vegetables have been employed generally in the treatment in anemic persons. High caloric feeding had been even touched upon by various writers. Fresh bone marrow had been used as early as 1894 by Fraser (Minot's paper). Small amounts of concentrated bone marrow, and generous use of fresh bone marrow had received favorable comment from a few clinicians. But it remained for Whipple and his associates, within the past few years, in various communications with titles such as "Blood Regenerations Following Simple Anemia", "Blood Regeneration Following Anemia": "Favorable Influence of Liver, Heart and Skeletal Muscles, in Diet on Blood Regeneration in Anemia" to throw the limelight upon food in blood regeneration. Besides McCallum had directed attention to liver and kidney as possessing a protein quality of exceptional value, particularly enhancing the growth. And, also Calkins, Bullock and Rohdenberg (cited in Minot's paper) had shown that foods rich in nucleins stimulate growth. From this Whipple has offered the suggestion that in pernicious anemia "there may be a scarcity of the material from which the stroma of red blood cells are formed" or that there may be a disease of the stroma, forming cells of bone marrow. The action of complete proteins, derived from liver, skeletal muscle, bone marrow, and kidney, in seeming to enhance the formation of red blood cells in pernicious anemia, by supplying material to build cell stroma, at least appears to offer

XUM

ground for a fascinating speculation, with a real hope of a new truth as indicated by recent results in treatment of this disease.

Liver Feeding in Treatment

Following up the suggestive work of Whipple and his co-workers, as to the favorable action on dogs of liver, heart and skeletal muscles in the diet for blood regeneration in anemia, Minot and Murphy began a series of observations upon some patients with pernicious anemia. This investigation was begun prior to August 1926, at which time they reported the effect of their observations on forty-five patients. Their early observations in pernicious anemia were favorable. The value of a diet rich in complete proteins and iron—particularly liver—and relatively low in fats was impressed by general improvement in clinical blood evolution of these cases.

Let us note the observations of Minot and Murphy in the first group of forty-five patients, and, later let us comment upon their observations in another group, which included all cases seen.

The first group were placed upon a diet. made as palatable as possible, with the following special specifications:

1. From 120 to 240 grams (four to eight ounces), and even more, of cooked calf or beef liver. As a substitute, a like quantity of lamb kidney was used. This amount was given daily.

2. Beef or mutton was given in 120 grams or more daily.

3. Not less than 300 grams of vegetables, containing 1 to 10 per cent carbohydrates, was given daily.

4. From 250 to 500 grams of fruit, like peaches, apricots, strawberries, pineapple, oranges and grapefruit, was given daily.

5. Only 40 grams of fat, obtained from butter and cream, was allowed daily. Animal fats and oils were interdicted.

6. Eggs, milk and bread were given in addition, making the general plan of the diet conform to the following prescription: 340 grams of carbohydrate; 135 grams of protein; and not more than 70 grams of fat, making a total caloric calculation of between 2,500 to 3,000 per day.

Experience soon showed that it was impossible to attain in all of the cases this intensive program of diet. It is a clinical experience which meets no exception here, that general rules and standard of treatment are inapplicable in every individual, particularly at the beginning of such a program. So each patient was treated with an individual plan. Sometimes only a thousand calories daily for the first week was possible. During the second week, and subsequent weeks, appetite and digestion were found to be improved in most cases.

This plan of feeding was supplemented by rest in bed, and by the administration of 15 c.c. of dilute hydrochloric acid (U. S. P.) in water each day. This was subject to individual requirements also. Only three of these cases received blood transfusions.

The forty-five patients of Minot and Murphy had had definite symptoms of pernicious anemia for two years before beginning this diet. Two had shown some symptoms for ten years. Many of the cases had been observed by Minot and Murphy for a year; some for a few months; some only a few days before beginning this special diet.

As well as could be done, the patients were thought to be beginning the treatment in the following stages of the disease: (1) twelve in their first distinct relapse; (2) seventeen in their second relapse; (3) sixteen in their second or more relapses. So, it appears that this treatment was placed upon trial in various phases of clinical evolution of the disease.

Spontaneous improvement, so often following the first relapse, could not explain findings observed, as will be shown. The forty-five cases of pernicious anemia began to evince rather rapid improvement after beginning the diet, and all except one, after having taken the diet from two years to five months, have continued to show improvement.

What are the signs of this improvement?

1. A change in the frequency of the stools: instead of diarrhea-like stools, there was usually one large formed stool with more normal gross appearance.

2. In two weeks, and sometimes at the end of the first week, a definite rise of the reticulocytes (young red corpuscles), from 1.0 per cent to 8.0 and 15.0 per cent of all the red cells was noted. The icterus index of the blood was observed to fall, and the yellow tint of the skin faded away at the same time. This icteric

index appeared to reach normal in two to four weeks. These blood changes were observed in cases early; before the red blood counts had attained 2,500,000 red cells per cubic millimeter.

While the average cell count in the forty-five cases at beginning of the treatment was, in round figures, 1,470.000 red cells per cubic millimeter, one month afterward, the average was round 3,400,000 for all, and in twenty-seven cases, from four to six months after the dietary treatment was begun, the red cell count averaged about 4,500,000 cells per cubic millimeter. It is worthy of note that patients of the group having had two or more relapses showed an average lower red cell count at the beginning of the treatment than did those who started after only one or even two relapses. All except three of these patients were in good state of heath at the time of Minot and Murphy's first paper (August 14th, 1926, *J. A. M. A.*). So much for the first group.

These authors, Minot and Murphy (*J. A. M. A.* Sept. 3, 1927), one year following their first paper, submitted additional observations. In this communication they gave further observations upon the first group of forty-five cases, covering a period of clinical investigation of from about one to three years, and they submitted data upon the effects of this diet, in sixty-five additional cases of pernicious anemia, making a total study of 105 patients with this disease—a remarkable number for clinical study. In a few of the cases, other physicians participated in securing the data submitted.

Of the 105 patients, ninety were placed on this diet when the red cell counts were below 2,700,000 and with an average for the ninety of 1,480,000 per cubic millimeter; and the other fifteen began the treatment when the counts were above 2,800,000. The combined reaction of these two groups was that there was a prompt response to liver feeding and rapid improvement in the patients; the blood of the early ones remained in good condition and the blood of the later ones quickly made improvement over the former condition. One of these patients died in four months with marked degeneration of the spinal cord, although the red cell count was 4,300,000 per cubic millimeter before death; another whose blood was improved less than any other patient's of this report, died at the age of seventy-one from cerebral hemorrhage; a third died by accident in an automobile collision, having 4,500,000 red cells two weeks before death.

The increase of red cell count in ninety of these patients in the first three weeks brought the count to over 3,000,000 cells per cubic millimeter from an average of 1,480,000 cells, while the remaining fifteen patients, who had an average at the beginning of treatment of 2,800,000, showed the same rate and amount of increase. The initial high color index fell as the cells increased; when the count became high, the index was one or less. The average diameter and volume of the cells rapidly became normal or smaller than normal. The white cells also increased to normal, reticular cells increased in number, and blood platelets increased. The bile pigments in the plasma decreased.

Reason for Choice of Liver and its Possible Modified Effect

On reviewing the work of Minot and Murphy, one is called upon to note the reasons for choice of liver in pernicious anemia.

1. The similarity of certain outstanding symptoms in a group of diseases which were known to be due to or associated with faulty diet. The symptoms of the gastro-intestinal system, the central nervous system and hematopoietic systems, so outstanding in pellagra, sprue and berberi (diseases of blood deficiency) are significant of pernicious anemia.

2. The history of all pernicious anemia patients is a history of abnormal feeding, abstinence from red meats and excess of fats.

3. The geographic distribution of the disease is not substantiated.

4. The improvement of cases of secondary anemia by food adjusts, and also association occasionally with known faulty diet.

5. The fact that patients with pernicious anemia often had better health when placed on a well balanced and high caloric diet containing an excess of nitrogen.

No review of recent work in this baffling disease (pernicious anemia) should fail to present the observations of Koessler and Maurer, who presented their findings in two papers; one entitled "The Relation of Anemia, Primary and Secondary, to Vitamin A Deficiency" (*J. A. M. A.*, August 14, 1926), and the other entitled, "Treatment of Pernicious Anemia with a High Caloric Diet, Rich in Vita-

XUM

mins," (*J. A. M. A.*, September 3, 1927). This work was done at the Sprague Memorial Institute and the department of Pathology, University of Chicago.

The idea that there existed a definite relationship between a faulty diet (Deficiency in Vitamins) and severe anemia (pernicious in type) was gotten by Koessler through contact with a patient, who had entered the hospital diagnosed scurvy and who had presented symptoms of sore mouth and gums, subcutaneous hemorrhages and pains on pressure over the bones (scurvy-like symptoms) but who had showed blood findings characteristic of pernicious anemia. This patient had given the history of an extremely restricted diet for many years, consisting of coffee and starches entirely, and devoid of any considerable elements of essential vitamins A, B and C, or D.

A case of pellagra also had entered the service of this hospital and had presented something of the same history, with skin lesions, nervous symptoms but with normal blood findings.

This idea inspired a series of experiments. These experiments were conducted upon white (albino) rats. Being an omnivorous animal, and being the best animals for vitamin studies, white rats held out promise of the possibility of producing a disease (pernicious anemia) thus far only known in man. The rats were divided into three groups; they were first put on a slightly modified laboratory diet used by Cramer; a low fat soluble A Diet (similar to the diet of many humans).

DIET I

Bread	30.0 Grams
Rice	20.0 Grams
Corn meal	20.0 Grams
Casein	12.0 Grams
Minerals	5.0 Grams
Cotton Seed Oil	12.0 Grams
Brewer's Yeast	100.0 milligrams

to each rat.

The animals were fed as much as they would eat.

DIET II was the same except cod-liver oil 12.5 c.c. was substituted for cotton seed oil. This diet is rich in fat soluble A and also in water soluble B.

DIET III contained no fat soluble A. Fat soluble A was extracted.

Rats kept on vitamin-A-free diet, for from eight to twelve weeks, eventually began to decline, became emaciated, refused to eat, lost weight, lost muscular co-ordination and exhibited chronic convulsions. These animals were saved by careful administration of glucose and saline solutions intraperitoneally injected, and later quickly improved by the addition of cod-liver oil or butter, forced into the mouth in a weak solution of sugar and sodium bicarbonate.

These animals, carefully given a diet increasingly rich in vitamin A, regained normal health but never regained normal size. The blood changes in these animals on vitamin-A-free diet was characterized by a drop in both erythrocytes and hemoglobin; this blood change occurred as weight of animals fell. The color index in these experimental animals remained around one. These drops were followed by a rise of both erythrocytes and hemoglobin. The details of these experiments are interesting but must be passed over to reach the statement of the authors that "the experimental data seem to show that the addition of a small quantity of vitamin A to the diet of an animal, long depleted in its vitamin reserve, brings about rapid formation of new blood cells". And as the initial statement in their second article (1927) above noted, they affirm that this work seems to show the experimental production of a blood picture in animals, which in all essential details shows a striking similarity to human pernicious anemia. As a result of the above noted experiments they have reached the following conclusions:

1. The fat soluble vitamin A is essential for normal blood regeneration;

2. The addition of vitamin A to the diet of animals long depleted in their vitamin A reserve brings about rapid formation of new blood cells;

3. A definite relationship exists between a state of chronic vitamin deficiency and certain anemias in man; and

4. The routine use of a rational, balanced diet rich in vitamins A, B and C, has proved of decided value in blood regeneration of patients suffering from pernicious anemias.*

The following dietary requirements in vitamin treatment of pernicious anemia should be observed, according to Koessler and Maurer.

*See J. A. M. A., August 14, 1926, and September 3, 1927.

The vitamin quality of certain foods must be known. For instance, vitamin A is supplied in giving cod-liver oil 5 c.c., four times daily. Butter is given in five to 6 prints or pats (30 grams) on vegetables or bread, each day. Whole wheat bread, made with milk, is richer in vitamins A and B, than is white bread. Whole milk and cream, especially in summer, contains a rich content of A and B vitamin.

The following vegetables are important: tomatoes, fresh or cooked, are given daily (if necessary canned), because they are very rich in vitamins B and C and also contain a small amount of A. Spinach for its A and B, lettuce for its A, B and C, cabbage fresh (raw) for its A, B and C, and carrots for its A, B and C, are the leading vegetables for anemic patients. In addition or as variety demands, string beans (snaps) (A, B and C), Swiss Chard (A and B), dandelion (A and B), cauliflower (A, B and C), peas (A and B) sweet potatoes (A and B), squash (A). To this fruits are given daily in order to get adequate C vitamin and some A and B: oranges, lemons, grapefruit, pineapple, strawberries, apple sauce and bananas. Such meats as liver and kidney, containing largest amount of vitamins A and B and also C are given.

The patient should be required to attain an intake of 2,500 or 3,000 calories daily. This may take time, as some patients are in a low state, and unable to take as much food as this program calls for.

One of the paramount difficulties in the treatment of pernicious anemia is the lateness of the stage in which the disease is brought to the hospital for treatment. Even when patients are brought in in a semi-conscious or delirious condition, an attempt at the administration of rich vitamin diet in liquid form is to be resorted to, and may be introduced by a stomach tube. Such patients may be given orange juice, egg nog, wheat germ extract, a liquid liver extract, and small quantities of milk. This may save the patient, as it did the rat. Transfusion in such patients is fraught with danger, but may be tried; protein shock to such patients may prove fatal.

Forty-two patients with pernicious anemia were treated by Koessler and Maurer with this rich vitamin, high caloric diet for from six months to two years. Ninety per cent of these patients were severely ill at the beginning of treatment, ten or (23.7 per cent) had a red cell count of from 550,000 to 1,000,000, at the beginning of the treatment, thirteen or (30.9 per cent) had a red cell count between 1,000,000 and 1,500,000, and eight or (19 per cent) had a count between 1,500,000 and 3,000,000, eleven or (26.2 per cent) had a count of 3,000,000 or more.

As immediate, if not ultimate prognosis, is influenced materially by frequency or number of relapses, it is worth while to say that twenty of these were in the first attack, thirteen in their second, four in their third, four in their fourth, and one his fifth relapse.

What improvement was gotten by Koessler and Maurer in this group?

1. Within two to three weeks polychromatophilic cells (immature) and reticulocytes (young) increased in number.

2. Increase of the red cell count and of hemoglobin was noted but was different in individual patients, apparently being influenced by the number of relapses experienced: those with more than one relapse, took a longer period to show increase, but the red cell count of all forty-four patients was between four and five millions in eight to fourteen weeks after this dietetic treatment was begun.

3. Icterus index decreased as red cells increased. Patient's color improved losing subicteric waxy appearance.

4. Subjective symptoms in all patients were definitely improved: feeling of warmth took place of "cold" and numbness of the extremities; increased interest in life and environment took place of apathy; appetite improved, and sense of well-being was experienced.

Eighty per cent of these cases showed improvement of the nervous system (spinal cord changes) and were improved in subjective and objective signs.

One may not close even so incomplete a review of the latter day treatment of pernicious anemia without calling attention, at least in a word, to the paper by Macht (*J. A. M. A.* September 3, 1927), entitled, "Pernicious Anemia—an Experimental Contribution to the Etiology, Diagnosis and Treatment".

Macht has evolved a phytopharmacologic test which demonstrates the toxic properties of blood serum of pernicious anemia patients, and this test has enabled him to make a differential diagnosis from other blood diseases, and has served, by its power to detect pernicious anemia toxins, to evaluate various

XUM

methods of treatment now being used. If these ideas are correct, an important factor in diagnosis has been discovered. Having determined by this test the presence of a specific toxin, Macht has used it in testing the following treatments:

1. Transfusion was found to be able to remove this toxicity from the serum for only a short time. Macht says, referring to pernicious anemia, "transfusions do not permanently or for any length of time eliminate the toxic substance."

2. The effects of liver treatment were variable, as tested by this method. In some the toxicity was markedly lowered; in others, not at all.

3. Because of the favorable action of sun light in anemic cases generally, a group of patients with pernicious anemia were tested after radiation treatment by ultra-violet ray. This test by Macht showed a marked decrease in the toxicity of these blood specimens.

Effect of Ultra-Violet Rays Plus Sensitizers.—This treatment consisted in use of ultra-violet rays (mercury vapor quartz lamp) after administration of eosin (or tetrabromfluorescein) 20 or more milligrams per dose. A lesser toxicity of the serum was obtained from this in pernicious anemia.

Effect of Organic Mercurials.—The use of mercurochrome-220 soluble in pernicious anemia was also commented upon by Macht. It was found that in a few cases of pernicious anemia treated by Dr. McLoughlin, blood serum toxicity decreased as the clinical picture of the cases improved.

1135 *West Franklin Street.*

URETERAL CALCULI WITH SPECIAL REFERENCE TO MANIPULATIVE TREATMENT.*

By WM. D. GOODMAN, M. D., Washington, D. C.

Introduction

There is no other condition presenting itself to the urologist which requires such a nicety of judgment and proper handling, as that of ureteral calculus. The X-ray ureteral catheter and the introduction of manipulative ureteral instruments have established the basis for modern treatment of ureteral stone. They have greatly reduced the surgical operation and the economic advantage of this can scarcely be overestimated.

*Read before the Medical Society of the District of Columbia.

Etiology

The etiology of ureteral stone is that these concretions are first formed in the kidney calyces, subsequently migrating into the ureter. It has been definitely established that some infection in the kidney pelvis is necessary for the development of stones, plus urinary stasis and a supersaturation of a stone-forming material in the urine. The organisms which have been found in the center of urteral calculi are usually a strain of streptococcus, also bacillus coli, bacillus pyocyaneus, and bacillus proteus. A specific organism has been isolated from the teeth and tonsils of urolithiac patients by Rosenow and Meisser.[1] Also Bumpus and Meisser[2] collected streptococci from the teeth, tonsils and even blood from a pyelolithiac patient and injected them into eighty-one rabbits, producing kidney lesions in sixty-three.

Pathology

We note that the ureter is composed of three coats, an external or fibrous, a middle or muscular, and an internal layer of mucosa. In a case of stone which has but recently appeared in the ureter, involvement of the mucosa is all that is noted. When there are one or more stones present over a period of time, there is a gradual accumulation of round cell infiltration into all the layers of the ureter, a condition which we may well designate as chronic interstitial ureteritis. In this inflammatory portion of the ureter, there is a deposit of lime salts, which may falsely enlarge the size of the stone on X-ray examination. These stones sometimes produce a small diverticulum in the ureter with the formation of a small pus sac, this giving rise to adhesions surrounding the external ureteral wall.

Symptoms

There are no pathognomonic diagnostic symptoms of ureteral calculi, as some believe. The one cardinal symptom is pain; next is hematuria. There may be urgency and frequency of urination. Nausea and vomiting are sometimes present. The pain is usually what brings the patient to the doctor. It is of great violence, doubling up the victim into a knot, causing him to go through all sorts of gyrations in an attempt to relieve himself.

It has been testified by women who have borne children, that the pain with stone is more severe than labor pains. It may be a dull ache over a portion of the kidney or

ureter. The location of this pain is, however, no index as to the location of the stone.

Attacks of stone pain may be frequent, every two or three weeks, or they may be every six months. There is no set rule. At times the periods are even a year or more apart.

Pain may be referred, and usually is in men, down and into one of the testicles, depending on which side the stone occurs. Acute pain is due to obstruction causing an acute pressure and distention of the ureter and renal pelvis. Hematuria is always present and varies from microscopic to a very pronounced bloody urine. The appearance of blood, visible to the naked eye, as a rule only occurs at irregular intervals. It may be previous to, during, or after an attack. Gastro-intestinal symptoms, such as nausea, vomiting, etc., only occur in acute attacks. Urgency and frequency are, at times, complained of, but are by no means constant. There may be a total retention of urine, thus extending into an incontinence. There may be fever and a slight increase in leucocytes. Leucocytosis is particularly marked in cases of acute obstruction, many times ranging from 20,000 to 30,000.

In cases of high leucocyte count, there is always cause for careful thought, as these patients sometimes require quick operative interference. Pus in the urine is another symptom which is constant, but may occur in any other urinary lesion. Thus, to recapitulate, there may be the following symptoms: pain, hematuria, frequency, etc. All of these signs call for a complete urological examination, ureteral catherization, renal function tests, pyelography.

Stones may occur at almost any age, but statistics show that most occur between the ages of twenty-five to thirty-five. We may, for convenience sake, call this the stone age, and, I may add, it is rather rare for stones to occur in people over fifty years. In regards to sex, it has been shown that women are affected with ureteral stone more often than men, in the ratio of two to one. This should be the logical expectation in view of the renal infection, plus obstructions which occur in the urinary tract of women. This applies particularly to women who have borne children.

The location of the ureteral stones show that about 70 per cent are found in the lower third of the ureter. The teaching that stones were most frequently lodged in the natural constriction of the ureters is now known to be incorrect. They may locate anywhere.

Diagnosis

The diagnosis of ureteral calculi cannot be made by symptoms. The X-ray ureteral catheter inserted into the ureter and a picture taken is our sheet anchor for definite diagnosis. If a stone is high up on the right side, we may differentiate this concretion from gallstones by the use of the Graham technique, taking a side view of the patient. Again, I want to repeat the importance of doing a complete urological examination because of the frequency with which surgeons mistake ureteral stone for appendicitis. It has been esti-

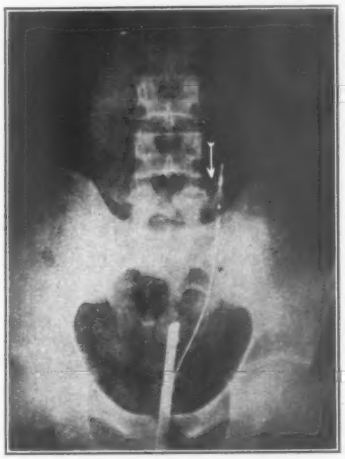


Fig. 1.—Arrow points to calculus and shows dilator just below the stone.

mated in surgical hospitals that 15 per cent of stone cases have had their appendices removed. This is by no means a credit to the profession.

A definite diagnosis should not present much difficulty if a complete urological examination is done. It is possible for an acute appendix and ureteral stone to be co-existent. This is, however, rather infrequent. A definite diagnosis sometimes can be made by palpating the stone per rectum if it is in the lower ureter. In females a vaginal examination is of the same value.[3]

Treatment

Experience has shown that 50 per cent of ureteral calculi will pass if given a reasonable length of time. These cases, therefore, come under the heading of medical treatment, or a

better term would be expectant. The other 50 per cent are surgical cases, to be relieved either by operation or manipulation. A fourth method of treatment, which is last, but not least, is to prevent the reformation of these concretions.

Therefore, each case is a law unto itself, and it is a matter of keen judgment which method to pursue. A few rules have been formulated to indicate surgical interference:[4]

1. A large stone, more than one and one-half centimeters in diameter, with no progress through the ureter, causing acute blockage with pus formation involving the kidney parenchyma.

2. When the kidney is being gradually distended, causing hydropyelonephrosis.

3. When reflex anuria occurs, causing impending uremic poisoning.

4. When the patient has severe reactions on cystoscopic examination.

5. When other diseases contra-indicate long attacks of pain.

When the above conditions do not exist, manipulative methods are in order. Manipulative treatment is a large field and will offer great possibilities because of its simplicity, and also from the patient's standpoint. They all desire to avoid an operation. The various instruments which have been devised give us a verstatility of approach for removal of these concretions. These manipulative instruments each has its outstanding advantages in removing stones, depending upon the location, size, and degree of implantation into the ureteral wall. The fundamental principle is not to actually drag or pull the stone from the ureter, but to dislodge the stone from its impacted bed and to dilate the ureter from below, thus giving the stone an easier passage.

As early as 1904, Bransford Lewis[5] brought out the point that the passing of a ureteral catheter will sometimes dislodge the stone and cause it to pass. Braasch and Moore believe it is the change of axis which starts the stone to descend. Crowell and others believe the injection of a lubricant is at times of value. The in-dwelling catheter deserves mention; also progressive ureteral dilatations are of value. However, when these procedures fail, we still have the following methods at our disposal:

First, I will mention the Damon A. Brown stone dislodger. The method of manipulation, after the instrument has been introduced into the ureter, is to expand the instrument beside the stone, as seen through the fluoroscope, using a set bony landmark which is at the level of the calculus, then rotate the entire instrument in an endeavor to turn or dislodge the stone.

The use of the W. C. Stirling[6] forceps is of value when the stone is lodged within the intramural portion of the ureter.

Next is the Welland Howard ureteral corkscrew instrument. It is of value in the intravesical portion of the ureter.

Next, the dilating bags of Dourmaskin,[7] which may be employed to great advantage.

The use of the whalebone olivary tipped, bullous ureteral bougie has been used with great success by G. M. Laws,[8] of Philadelphia, in removing ureteral calculi high up.

The above manipulations mentioned are carried out as follows: The patient is given one-sixth grain of morphine and one-hundredth grain of scopolamine before going to the operating room. The cystoscope is passed in the usual way, using 4 per cent novocain to anesthetize the urethra. The ureter is catheterized, and a 4 per cent solution of novocain is injected into the ureter. This is allowed to stay in for ten minutes; then the fluid is withdrawn and sterile olive oil is injected. Then we are ready to try the manipulative treatment.

After ureteral stones have been removed, it is very important to take measures which will in all prabability prevent the reformation of these concretions. All foci of infection should be removed, such as infected teeth and tonsils. Conditions causing urinary stasis should be corrected, such as strictures of the ureter, kinks of the ureter, and ptosed kidneys. Intra-abdominal tumors may also be mentioned. Diuresis maintained at a high level by a liberal fluid intake provided cardiovascular complications are not present. It is wise to tell the patient to get a urinometer and take the specific gravity daily, maintaining it at a level of about 1.012. In order to prevent the precipitation of phosphates, the urine should be acidified by the regular administration of phosphoric acid. The protein intake should be restricted to a total amount of about 70 gm. a day. Liver, brains, thymus, spleen, kidneys, sardines and anchovies should be excluded from the diet. They show a rather high nu-

clein content that leads to an increase of uric acid. A high content of uric acid in the blood is apt to lead to the precipitation within deranged kidneys of uric acid in crystalline form.

Of vegetables, tomatoes, spinach and rhubarb are better avoided on account of their high content of oxalic acid.

Summary

1. Ureteral stones are formed in the kidney calyces and subsequently migrate into the ureter.

2. There are four factors which enter into the formation of ureteral stones; first, infection; second, stasis; third, colloidal changes in the urine; and fourth, a supersaturation of some stone forming material.

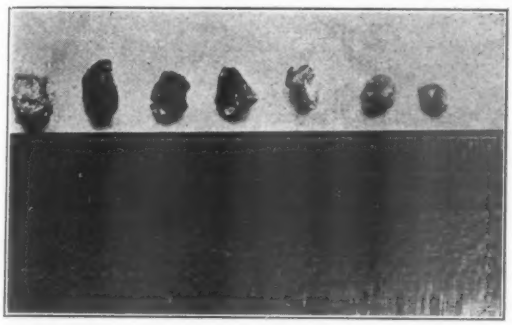


Fig. 2.—Specimens removed by ureteral manipulations.

3. X-ray is the sheet anchor for diagnosing ureteral stones.

4. Pain is the outstanding symptom of ureteral stones.

5. Seventy per cent of stones lodge in the lower third of the ureter.

6. Most stones occur between the ages of twenty-five to thirty-five.

7. Fifteen per cent of appendices removed are later found to be really cases of ureteral calculi.

8. Fifty per cent of ureteral calculi are passed if given a reasonable length of time. Fifty per cent of cases are surgical and of these 50 per cent, 80 per cent can be relieved by manipulations.

9. The introduction of manipulative instruments has brought about the possibility of removal of ureteral stones without operation.

10. Dilatations failing, extra-peritoneal uretero-lithotomy is the operation of choice.

11. After stones have been removed, prophylactic treatment should be instituted. Correct strictures, ureteral kinks and relieve ptosed kidneys and other conditions causing urinary stasis. The urine should be kept acid, and specific gravity not over 1.012.

12. The diet should be corrected according to the chemical make-up of the offending stone.

References

1. Rosenow and Meisser. Nephritis and Urinary Calculi After Production of Chronic Foci of Infection. *Journal of American Medical Association*, 1922, Vol. LXXVIII, p. 266.
2. Bumpus and Meisser. Focal Infection and Selective Localization of Streptococci in Pyelo-Nephritis. *Archives of Internal Medicine*, 1921, Vol. 27, p. 326.
3. Judd, A. M. Technique of Vaginal Palpation of the Uterus and Ureterotomy, Their Advantages and Possibilities. *New York Medical Journal*, 1920, Vol. CXI., p. 986.
4. Thomas, G. E. *Minnesota Medicine*, 1923, Vol. VI, pp. 226-232.
5. Lewis, Bransford. A New Sign in the Diagnosis of Ureteral Stone. *Journal of Urology*, 1922, Vol. II, pp. 487-498.
6. Stirling, W. C. Ureteral Forceps. *Journal American Medical Association*. Vol. 88, No. 12, March, 1927. pp. 924-925.
7. Dourmaskin, R. Dilatation of the Ureter with Rubber Bag in the Treatment of Ureteral Calculi. *Journal of Urology*, 1926, Vol. XV., pp. 449-460.
8. Laws, G. M. A Contribution to the Technique of Extracting Ureteral Calculi and Dilating the Ureter. *Journal of Urology*, XVII, 1927, pp. 661-662.

The Farragut, 17th and Eye Streets, N. W.

THE ULTRA-VIOLET RAY, AND ITS USE IN TUBERCULOSIS—WITH CASE REPORTS.*

By GARNETT NELSON, M. A., M. D., Richmond, Va.

It is not the purpose of this paper to make an attempt to contribute anything to existing knowledge in regard to the use of light in treating tuberculosis. It is merely a republication, or re-arrangement of other contributions, in the hope of promoting a more general familiarity with the clinical application of light, and is justified by a belief that certain cases of tuberculosis can be readily cured by its use that can not be cured without it, while other cases that may in time respond to other methods will, if light is also used, respond more promptly and with better final results. On the contrary, it is a serious error to think

*Read at a Staff Meeting of the McGuire Clinic, December 20, 1927.

that light is beneficial in all tubercular processes, an error that may speed up or effect a fatal termination. The indications are fairly clear cut. They will be discussed more fully later on in this paper.

Now, in order to make the best use of the ultra-violet ray we must have a fairly adequate knowledge of three things,—we must know the tissue and chemical reactions to the tubercle bacillus, and we must know as far as they are known the tissue and chemical reactions to light, and the relation of each to the other, that is, the effect of the reactions to light on the reactions to the tubercle bacillus, whether beneficial or injurious.

Our first general knowledge of the use of light in this country begins with the publication of Rollier's book in 1913. The first case treated in Richmond was treated in May, 1921. We will first discuss fairly fully the ultra-violet ray. We are all familiar with the colors of the visible solar spectrum from violet to red. Beyond the visible red rays there are the infra-red and beyond the visible violet there are the ultra-violet, the rays of different wave lengths possessing different properties. The ultra-violet rays from sunlight vary in wave length from 390 to 290 millimicrons (a millimicron is one millionth of a millimeter). Artificial rays may be as short as 185. All wave lengths have some heat and chemical energy, with most of the heat in the red and infra-red, most light from red to violet, and the chief chemical or actinic energy in the ultra-violet. The ultra-violet loses this property entirely if obstructed by certain substances, such as ordinary window-glass, so that chemically there is no such thing as a bright shunshniy room if the windows are closed. Its properties are enhanced by heat and by moving air. They are impaired by moisture and dust, and are to a great extent lost in penetrating atmosphere to reach low lying countries. They are much more intense around midday than in the early morning, or late afternoon, and are intensified by reflections as from snow, sand, ice or water. Their intensity is greatly affected by seasonal variations, being greater in the summer months, greatest in July. One summer day with dry air may have as much radiation as a whole month of damp days in winter. The nearer the equator, the less the seasonal variation.

Incidentally one question should be asked and answered very early in any discussion of the ultra-violet ray. The question is,—Is the effect that the ray may or may not have on the skin and its blood vessels and nerves a matter of much importance? The answer is that it is a matter of tremendous importance and is well illustrated by the timeworn comparison of the skin and the kidneys. A whole kidney, that is one-half of the total kidney tissues, and part of the other may be destroyed without in any way affecting the health, and a total suppression of urine for as long as fourteen days is not incompatible with life; whereas the destruction of as much as one-third of the skin must be followed by death. The skin is a vast field of living cells, exposed to stimulation or injury, and the effect of the ultra-violet ray is to increase its respiratory, excretory and protective powers. The ultra-violet ray will penetrate the skin to a depth of 1 millimeter, reaching the rich capillary beds in and under the skin, producing marked physical and chemical changes.

The ray is absorbed by hemoglobin, also by blood serum. It will cause hemolysis of red blood cells in vitro. It will stimulate, coagulate, or destroy protoplasm, and convert egg or serum albumin into globulin. It causes erythema, pigmentation and desquamation. It renders cholesterol, which is normally present in large amounts in the skin, anti-rachitic, having the same effect on cod-liver and other oils, fats, milk and certain vegetables. Radiation of a pregnant mother makes her milk anti-rachitic. In anemia it will increase the number of red cells and platelets, and raise the percentage of hemoglobin. It increases the bacteriophagic and bactericidal power of blood serum and leukocytes.

The effect, if any, of the ultra-violet ray on metabolism can not be stated quite so clearly. Authorities are not in full accord and the published evidence is a little confusing. Metabolism is considered under two heads, mineral metabolism and basal metabolism. On account of the fact that in tuberculosis alone of all infections a part of the healing process is a deposit of lime salts within the tissue reacting to the tubercle bacillus, that is within the tubercle itself, an immense amount of work has been done in an effort to reach some conclusion acceptable to everyone in regard to the effect of tuberculosis on the blood calcium, and by the administration of calcium, or the

use of the ultra-violet ray, to offset demineralization if such a thing exists in tuberculosis. The questions of demineralization, and the use of calcium, and the effect of light on mineral metabolism, especially that of calcium, cannot be dismissed as of no significance, though, as was said above, the published reports of experimental studies with their conclusions are confusing.

Strong presumptive evidence that calcium can be gotten into the human system in some way so as to help prevent or cure tuberculosis lies in the well known fact that workers in lime and plaster-of-Paris are relatively immune. There does not seem to be any argument about this, nor about the specific relationship between immunity and occupation; still we find as follows: "In tuberculosis there is no disturbance of the calcium metabolism." "Oral administration of calcium does not increase the amount of calcium in the blood and tissues in experimental tuberculosis." "The calcium of normal persons is made no greater by giving ninety grains of calcium lactate daily for ten days." "Calcium alone, or combined with thyroid or parathyroid gland, does not cause an increase in the serum calcium of tubercular patients." "Exposure to the ultra-violet ray has no effect on the blood calcium of tubercular individuals." Denis and Minot say that it is impossible to increase the concentration of calcium in plasma by ingestion of calcium salts. Conversely, we find that Rollier believes that there is a demineralization in tuberculosis, and that the ultra-violet ray does offset this and raise the blood calcium and phosphates. Another author reports that seventy-five grains of calcium chloride by mouth daily raises the plasma calcium 2.5 milligrams per 100 c.c. M. E. Fries states that the increase in blood calcium and phosphorus during radiation is well known. Another author reports injecting intravenously one and one-half grains of calcium chloride every other day with a marked rise in the blood calcium that is maintained for approximately forty-eight hours. He, of course, gives the usual warning against gangrene.

So much, briefly, for the diversified views in regard to mineral metabolism in tuberculosis, the effect of the administration of calcium, and the effect of the actinic ray. It seems proper to make the following comments: Entirely too much attention is being paid to the amount of blood calcium, which may be of no significance whatsoever. The whole question may be one of the storage of calcium, of which not everything is known. The specific tissue reaction to the tubercle bacillus, that is the tubercle, heals for the most part by calcification. The actinic ray to some extent promotes the calcification of tubercles, though, of course, the chief benefit is associated with resolution and absorption.

Basal metabolism is mentioned only to dismiss it. There is no fixed relation between tuberculosis and basal metabolism, nor does a single radiation, nor does a series of daily radiations cause either a definite rise or fall.

In regard to the tissue reaction to the tubercle bacillus, we may have an acute inflammation, a lobar or bronchopneumonia, in no way differing from other acute inflammations or pneumonias, but as a rule the reaction is the specific tubercle, occurring singly, or in conglomerate masses, proceeding to caseation, softening, and liquefaction, or on the other hand to calcification, or fibrosis, or resolution and absorption.

Too much stress must not be laid on the local pathology for fear of losing sight of the fact that tuberculosis is a constitutional disease. It is not convenient at this time to go into a consideration of the problems of constitution, or disposition, whether inherited, acquired, or racial, nor those of immunity and resistance; but the terms local or surgical tuberculosis should be used guardedly, although in this day of thorough general studies, of preoperative caution and post-operative care, we are not apt to lose sight of the fact that we are dealing with a local manifestation of a constitutional disease.

The effects of the actinic ray are fairly parallel to the effects of tuberculin, namely a local, a general and a focal reaction. Proper dosage of light causes erythema, improved appetite, a sense of well-being, and promotes sleep, and causes in the region of tubercular foci an increased supply of blood with more erythrocytes, a higher percentage of hemoglobin, and added bactericidal power. Overdosage causes local stasis, formation of thrombi or even a complete destruction of the skin; lost appetite, a sense of fatigue or malaise, insomnia, and a mobilization of bacilli with rapid dissemination of infection. In those who should receive the actinic ray the effect

is striking, and we may expect a rapid relief of subjective symptoms with resolution and absorption and a complete disappearance of pathology. As must be inferred from the preceding discussion and despite the undisputed value of the ray, its use is still empirical. There are three theories, one that the action is due to some effect on the blood, a second that it is a reflex nervous action, and the third that there is some hormone in the skin that becomes activated. Each has its advocates, but no one is generally accepted.

Granting the empiricism, the indications can still be clearly stated. Watson, of Tucson, suggests the following classification:

A. Extrapulmonary tuberculosis (so-called surgical)
   Without pulmonary lesion.....Class 1
   With pulmonary lesion .....Class 2
B. Pulmonary tuberculosis (infection of lungs and tracheo-bronchial glands)
   Productive, childhood type, glandular, Class 3
   adult type, lungs....Class 4
   Exudative .....Class 5

KEY

Class 1. Use light in all cases.

Class 2. Use light in all cases, but be careful to avoid reactions, and be especially careful in exposing the chest.

Class 3. Use light in all cases.

Class 4. Use light only in those cases which, in spite of the best hygienic-dietetic treatment, remain stationary or lose ground.

Class 5. Never use light.

Mayer, of Saranac, says that the best results are obtained in the so-called pre-tubercular child; tuberculosis of the lymph nodes, including the hilum and mesenteric glands; tuberculosis of the pleurae, bones, joints, peritoneum, intestines, skin, mouth, pharynx, larynx, and in corneal and phlyctenular ulcers. His results have not been so satisfactory in genito-urinary infections, but he comments on the rapid healing of old sinuses following nephrectomy.

The contra-indications are what Watson calls exudative pulmonary disease, that is, soft activity with fever, night sweats, rapid pulse, much cough, copious sputum, and cavity formation; also aged people with decompensating hearts or much arteriosclerosis; also individuals with toxic nephritis.

The technique and dosage may be discussed together. The light we use is the Alpine lamp with the quartz vacuum burner. The first exposure is for one minute only at a distance of thirty-six inches, and we approach even a mild erythema gradually, as a rule adding one minute each day, though we have no fixed rule in regard to distance or time of exposure, except the rule that under no circumstances must there be a definite burn. The sensitiveness of different skins or different parts of the body, such as the hand compared with the abdomen, are given due consideration, and general reactions are avoided. The use of actinic rays must never be accompanied or followed by a feeling of fatigue or malaise. We attempt to add one minute daily, and gradually bring the lamp closer, so that in about three weeks the exposures are from twenty minutes to half an hour with the lamp sixteen to eighteen inches from the body.

Since the opening of this clinic in December 1923, we have handled 230 cases of tuberculosis of one sort or another. Among these there were 156 cases of pulmonary tuberculosis; fourteen cases of abdominal tuberculosis, involving the intestines, mesenteric glands or peritoneum, one or several; thirty-six cases of tuberculosis of the bones or joints; of the bladder one; of the breast one; of the genito-urinary organs two; of the lymph nodes fourteen; of the kidney six; of the pharynx one; of the skin one; of the tonsils one; and of the thyroid three.

Most of these cases have come in for diagnosis only and it has not been possible to hold them for definitive treatment, so that we have been able to use the lamp on only eighteen separate individuals. Of these, fourteen were abdominal, six were involvements of the lymph-nodes of the neck, chest or mesentery, one or more; one of the kidney; and of these eleven also had, or had had, involvements of the lungs. Our results show that of all these cases one only failed to improve or recover. Four cases have been selected to report:

1.—Mrs. M. H., white female, age forty-two. The duration of the constipation or diarrhoea was about one year. In the spring of 1922 she developed a chronic diarrhoea with bloody stools, and later severe abdominal pain. There was some loss of weight, from about one hundred and ten to ninety-eight pounds. Her general condition became so poor and her weakness so great that a transfusion

was done during the early part of August. On August 22nd she was referred to us and a diagnosis of tuberculosis of the bowels was made, and the lamp advised. At this time her hemoglobin was thirty, and her weakness so great that she had to be brought to the office in a car and lifted to the table for treatment. In about two weeks there began to be definite improvement, with fewer bowel movements, and a decided gain in strength. In about six weeks the bowel movements were normal, her hemoglobin was seventy-six, and she was able to come to the office without assistance, using a street-car, and doing the necessary walking to and from the car. There was a gain of ten pounds in weight. The lamp was used fairly regularly until the following August, then discontinued. About five months later there was a mild diarrhoea and the lamp was again used for several months. Her present condition is excellent. She weighs 110½ pounds and does the cooking and dish washing, in fact, all the housework, for five people in a house with five rooms. In short, she is clinically well after a lapse of five years.

2.—Miss O. A., white female, age thirty-four. In July 1921 this patient was referred for the use of the lamp on account of tubercular adenitis of nine years' duration. There were numerous enlarged nodes, one very large, red and fluctuating, and two sinuses. She also had bilateral fibroid pulmonary disease. She was running a daily temperature of about 101. Her weight was ninety-six pounds. There was clinical and X-ray evidence of intestinal tuberculosis. Local response to treatment was very gradual. One sinus in particular responded very poorly, but after several months the sinuses were well, no enlarged glands could be seen nor felt, and there were no scars except at the sites of the sinuses. The improvement in her general condition was more prompt. In a few weeks her temperature was normal, and she weighed 122 pounds. There has been one return of the adenitis, possibly due to oral sepsis. At present her general condition is excellent. There are crackling rales scattered throughout the left lung and in the upper part of the right, but she feels tough and strong, and considers herself well six years after treatment was begun.

3.—Mrs. M. B. S., age thirty-seven, white female. This was a case of pulmonary tuberculosis of long standing that was doing very well until the spring of 1926 when she developed intestinal indigestion with pains in the intestines. There was no marked constipation nor diarrhoea, and no blood in the stools, but mucus was present from time to time. She lost considerable strength and developed a low grade fever. Examination of her abdomen showed a large, dense, irregular mass occupying almost the whole of the right abdomen, extending nearly to the umbilicus and apparently up under the ribs and into the pelvis. It was believed that this was tuberculosis of the omentum and mesentery. In March 1926 treatment with the ultra-violet ray was begun, and in two months' time her symptoms were entirely relieved. The mass had melted away so that it was hardly palpable. Treatment was continued and in July examination of the abdomen failed to show the presence of any mass that could be felt except with great difficulty. Her clinical condition was excellent.

It is noted in the record that in December 1926, a pelvic examination showed pathology that might possibly be tuberculous. She has not been in for examination since this time, but has been seen about the street frequently, and is apparently well.

4.—Mr. R. V. G., white male, age twenty-eight. This patient had led rather a checkered career with pulmonary tuberculosis and abdominal symptoms. In the fall of 1918, on account of weakness, fatiguability and abdominal pain, the diagnosis of chronic appendicitis was made and the appendix removed. This did not relieve the abdominal symptoms, and a few weeks after the operation alternating spells of constipation and diarrhoea developed. In June 1920, he was treated for ulcer of the stomach but made no improvement. In September 1920, a diagnosis of spastic colitis was made, but there was no improvement under treatment. In January 1921, he first came to us, the diagnosis of intestinal tuberculosis was made, and he was sent to Mount Regis Sanatorium. There was little or no improvement and a laparotomy was decided upon. In March 1921, the abdomen was opened and inoperable tuberculosis involving chiefly the cecum, ascending and transverse colon and the mesentery glands of the peritoneum was found. The abdomen was closed without drainage.

Nine weeks later his condition had become

XUM

so much worse that death seemed inevitable. His bowels moved twelve to fourteen times a day; the pain was so great that morphine had to be used several times daily. There were nausea and vomiting and great emaciation. The use of the lamp with this case was our first experience with this method of treatment. About eight days after the lamp was begun there began to be improvement, with fewer stools, less pain, and a cessation of the nausea and vomiting. Two weeks from the time the lamp was first started he was moved from the hospital to his home. His improvement from then on was uninterrupted, and in the course of several months there was a gain in weight of thirty-eight pounds, and a complete cessation of all abdominal symptoms. He is at present living and symptomatically well six years after the beginning of treatment with the ultra-violet ray. It is not believed that the course of the pulmonary involvement was affected in any way except to the extent that curing the involvement of the bowel, mesenteric glands, and peritoneum, has enabled him more successfully to combat the pulmonary disease.

NOTE:—Since this paper was written, experiments on living animals show that the penetrating power of the ultra-violet ray is deeper than was formerly believed, so much so that with rabbits it may extend through the skin and other tissues into the abdominal cavity.

McGuire Clinic.

THE RELATIVE FREQUENCY OF THE VARIOUS ABNORMAL POSITIONS OF THE VERMIFORM APPENDIX AND THE DIRECT BEARING ON APPENDICEAL MORTALITY.*

By O. T. AMORY, M. D., F. A. C. S., Newport News, Va.
Visiting Surgeon, Riverside Hospital.

A great deal has been written concerning the normal position of cecum and appendix with reference to its subsequent pathology, but on a perusal of the literature little can be found concerning the abnormal location of the organ and its relation to the increased surgical mortality in appendicitis. Notwithstanding the excellent work that has been done in reducing the mortality of appendicitis, the fact remains that we have a very high mortality from the disease.

The author of this paper will not attempt to go into the normal case of appendicitis, as we are all familiar with that condition, but he will attempt to refresh our minds on the abnormal cases that are usually the baffling ones.

When one bears in mind the fact that an appendicular abscess is usually located at the sight of the appendix, though frequently the pus will escape into the numerous folds and crevasses of the abdominal cavity, one must be aware of the frequency of abnormal cases in order to recognize the condition. The position of the abscess is most likely to be determined by the position of the appendix and the surrounding fold of the peritoneum. In order to appreciate more fully the abnormal positions of appendix, it will be better first to describe the various normal positions in which the cecum and appendix are found. Gladstone and Wakely, in an analysis of three thousand cases, found the various locations of the appendix as per the following table:

	Position of the Appendix	No of Cases	Per Cent
1.	Anterior or pre-ileal	27	0.9
2.	Splenic or post-ileal	15	0.5
3.	"Pelvic": on psoas muscle, near or hanging over the rim of pelvis	825	27.5
4.	Sub-cecal, beneath the caput ceci	56	1.86
5.	Post-cecal and retrocolic	2076	69.2
6.	Ectopic	1	0.033

From perusal of the literature and textbook description of appendicitis, diagnosis should be simple, but when one sees the number of cases having had any number of abdominal operations, usually the first one being appendectomy, unrelieved of their symptoms, all of must admit that the diagnosis of appendicitis is a difficult problem, especially in the so-called chronic appendix cases.

I do not belong to the school that claims there is no such diagnosis, but I do emphatically state that one is only justified in making such a diagnosis after he has eliminated the genito-urinary tract, various forms of spinal disease, intestinal parasites, syphilis, tuberculosis of the peritoneal cavity, gall-bladder and stomach, tabes, various gynecological conditions, typhoid, come conditions of the chest, etc. Epididymitis can very easily be confused. In other words, if one has eliminated everything else, chronic appendix is permissible, and in these cases a kind benevolent pathologist will find a few chronic changes to ease you over.

*Read before the Warwick County Medical Society, at Newport News, Va., November 14, 1927.

Appendicitis in children is not as infrequent as one would think, and requires a very skilful study, as we are aware of the high mortality it carries.

Morris Cohen reports, out of 367 children admitted to Lebanon with acute surgical abdomen, 354 were diagnosed acute appendicitis before admission. Out of 327 operated upon, 312 showed inflammation of appendix. The remaining showed—pyelitis, three; mesenteric lymphadenitis, six; mesenteric node, one; primary acute diffuse peritonitis, three; torsion of ovarian cyst, one; torsion of omentum, one. The twenty-seven not operated improved or cleared up. He reports 19 per cent mortality in children four years and under.

One must remember that when you have pathology of the appendix that you also have extension of pathology in other organs. The unusual types of appendicitis, for sake of discussion, may be classed as follows:

1. Anatomical displacement.
2. Pathological displacement.
3. Those cases displaced by pressure from other enlarged organs, as pregnancy, tumors, etc.
4. Congenital mal-positions.
5. Those cases associated with other inflammatory processes and temporarily overshadowed by them. Of course, other conditions too numerous to mention here may be added, but I think these are sufficient to express the thought the author has in mind. It is a very comforting feeling one has at times, and frequently very humiliating at others, when one has explored the gall-bladder tract for supposed pathology, the stomach and duodenum for ulcer, pancreas, spleen, etc., without showing sufficient pathology to explain the symptoms complained or find a diseased appendix, sufficient to explain the symptoms for which one operated.

It is an experience of every surgeon to have the upper abdominal symptoms relieved after removal of an appendix showing little pathology.

Discussion of Classification

1. Anatomical Displacements.—The appendix, being a decidual type of organ, hooked up, as it is, to a long tortuous tube at the junction of larger to the smaller portion, is more or less free to enjoy a wide range of latitude as well as liable to become infected, due to its position, as it predisposes to fecal stasis and irritation. The normal caecum is really a cesspool, teeming with various bacteria.

Quoting Gray, "In unusual cases the appendix is found in the inguinal canal as a portion of or the sole contents of a hernia. Adherent to parallel peritoneum in front of or the side of caecum, adherent to the under surface of caecum and in contact to its muscular wall, and covered by its peritoneal coat; when the caecum is mobile, the appendix may be found almost anywhere in the abdomen. When the caecum is undescended, the appendix shows in its failure to descend and may be below the gall-bladder or in front of the right kidney and may pass in several directions—upward behind caecum, to the left behind ileum and mesentery, or downward and into the pelvis. It is certainly the experience of the writer that the appendix may be found most anywhere in the abdomen, and at times simulate most any intra- as well as extra-peritoneal condition.

2. Pathological Displacements.—The majority of these abdominal locations are due to inflammation in adjacent organs, extending to or involving the appendix, and, in the stage of restoration, adhesions pull the appendix to its new bed; as examples,—pelvic inflammatory conditions, various forms of nephritis pathology, acute upper abdominal conditions, strangulated hernia, etc.

3. Those cases displaced by pressure from enlarged, or pathology in, adjacent organs, the most frequent probably being pregnancy, large fibroids, cysts, hernia, enlarged kidney or spleen, etc. In general visceroptosis, the appendix enters in the general descent.

Appendicitis in pregnancy occurs most frequently during the first six months, rarely later. Usually you have a history of previous attacks. They run a rapid course. The leucocyte count is not of much help on account of the increased normal leucocyte count in pregnancy. These cases usually do very well, even if you have to drain. Very few abort.

There are various mal-positions of the appendix, too numerous to mention here, but a few will be recalled. One finds in the literature cases of complete abrasure of the appendix, transposed appendix, undescended, partial or complete, Jackson membrane, and extra-peritoneal cases. The latter show high per cent of blood and pus in urine; also, pain in

XUM

back and genital organs is more severe in this type of case.

Cases associated with other inflammatory processes and being temporarily overshadowed by them occasionally show acute pathology in the appendix; less frequently the condition is simply a secondary extension. The former applies to acute gall-bladder pathology, gastric or duodenal ulcer, ruptured or otherwise, mesenteric adenitis, etc.; the latter is found more frequently in pelvic conditions. One should bear in mind that acute pathology in the appendix gives septic pathology in other organs as well.

Regardless of the location of a diseased appendix, one usually finds the characteristic symptoms, and, in addition, symptoms of involvement of the organ or organs with which the diseased appendix is in close proximity; however, the latter might, and frequently does, overshadow the appendix.

The cardinal symptoms, with relative frequency, are, regardless of its positions, about as follows:

1. Pain, 100 per cent; 2. Nausea, 35 to 44 per cent; 3. Local tenderness, 89 per cent; 4. Increased tension, 25 to 43 per cent; 5. Rigidity, 40 to 65 per cent; 6. Increased temperature, 68 to 84 per cent; 7. Increased pulse, 44 to 84 per cent; 8. Increased polys., 90 per cent; leucocytosis, 79 to 95 per cent. Sorisi test is a very reliable symptom and its relative frequency has been variously estimated; in my experience, it has proved a very valuable sign, especially in normally located diseased appendices, but it is necessary to pull vigorously to be positive.

As to the treatment of appendicitis, all of us know how to do an appendectomy but the present mortality is sufficient to show that we have not as yet mastered its cure, as too frequently comparatively mild cases die. In acute non-suppurative cases with early operation, splinting the bowel before and after operation with morphine, forced fluids, etc., they should all get well, barring uncontrollable complications. In suppurative cases with increased spreading of infection, it is better to do a simple drainage unless the appendix comes up easily and can be removed without difficulty. In cases where there is a tendency towards localization, the best policy is to wait and use supportive treatment.

Appendicitis with pregnancy does not tend to localization, with abscess formation, but, instead, there is an increased spreading, with diffuse general peritonitis resulting. In this type of case, do drainage with or without appendectomy. A cecostomy, inserting a small catheter in the appendix opening, will relieve distention, drain the bowel, and serve as an avenue through which fluids may be introduced. A very small per cent of these cases will abort. These cases, as all surgical cases, should be handled very carefully, moved as little as possible, fluids forced through every avenue, elimination promoted, and support them. Not a little of our mortality is due to the lack of proper surgical judgment, indecision, lack of knowledge of various abnormal locations of appendix, haste, crudeness, and roughness in tearing of tissues, and to medical treatment in general.

DIETARY DEFICIENCY DISORDERS.*

By H. W. PHILLIPS, M. D., Norfolk, Va.

Modern medicine is rapidly undergoing important changes in the direction of disease prevention, and certain dietary requirements are necessary for the prevention of a wide range of conditions of ill health.

The food principles, carbo-hydrates, fats, proteins and minerals, cannot be built into body tissues without vitamins. The word vitamin was introduced into physiologic literature through Funk's studies on pigeons, following up the pioneer investigations of Dutch scientists, Eijkman and Grijns.

The story of the abnormal behavior of pigeons kept on a diet of polished rice and their astounding recoveries when small amounts of certain supplementary foods are added to the ration, has become classic.

The vitamin itself is yet undiscovered, its chemistry unknown, its deficiency pathology syndrome (avitaminosis) not properly understood. Yet the effects of vitamin-deficiency and vitamin-feeding, in extensive animal experimentation, is accurate and definite and the results dependable.

Among the diseases prevented wholly or in part by vitamin-feeding are xerophthalmia, polyneuritis (beri-beri), scurvy, rickets, sterility, caries of teeth, and anemias.

Xerophthalmia, or that condition of the eyes which shows an atrophic conjunctivitis with

*Read before the Norfolk County Medical Society, November 21, 1927.

keratitis and tendency to ulceration, occasioned by vitamin A deficiency, can be promptly relieved by feeding the patient a diet rich in vitamin A, a fat soluble vitamin that is found in cod liver oil, eggs, milk, cabbage, lettuce, carrots, and tomatoes.

Minimized cellular activity and lowered resistance to infection are also results of vitamin A deficiency.

Polyneuritis (beri-beri) and such disorders as malnutrition, loss of appetite and digestive disturbance, are the result of vitamin B deficiency, and recovery follows the use of food containing vitamin B, a water soluble vitamin, which is anti-neuritic. Vitamin B is found in yeast, wheat germ, leafy vegetables, and fruit juices.

In the Russo-Japanese war beri-beri was a veritable scourge, whereas there were limited serious outbreaks of typhoid, typhus, scorbutus, and dysentery.

Scorbutus (scurvy) is caused by deficiency of vitamin C. Recovery follows feeding the scurvy patient an anti-scorbutic diet, that is, one containing the water soluble vitamin C, such as fresh fruit, vegetables, tomatoes, and glandular organs. Armies, Polar expeditions, and mariners at sea suffered from outbreaks of this disease due to lack of vegetables and fruits. Prophylaxis depends upon daily feedings of fruit and vegetables. In infant feeding it is best to use the milk from the herd that grazes upon green grasses, as there we have our greatest source of vitamin C, ensilage being the principal source of vitamin C in stable fed cows. Olson and Copland and many others are of the opinion that vitamin C in milk has its origin in the feed of the cow. Hess and Unger, in 1919, and Dutcher, in 1920, concluded that cows that are fed vitman rich ration yield vitamin rich milk. To the contrary, Hughes, Fitch, Cave and Riddell report recently that vitamin C content of cow's ration has little, if any, influence on vitamin C content of the milk,—yet it is probable the animal body does not synthetize this vitamin.

Rachitis (rickets) with its osseous changes, and *spasmophilia* are conditions brought about as a result of vitamin D deficiency, and it is only necessary to feed the patient the antirachitic oil soluble vitamin D, which is found chiefly in cod liver oil. Vitamin D is specifically related to phosphorus and calcium metabolism. Vitamin D is not produced within the living body of man. It is necessary to supply it through the ingestion of antirachitic food, or through exposure of the skin to sunlight or ultra-violet rays.

The short ultra-violet rays (below 313 millimicrons) activate the sterols, and at the present time it would seem as if ergosterol is the substance acted on in the superficial tissues by these rays. Ergosterol is the parent (precursor) substance from which vitamin D is formed. It is possible that the activity of cholesterol, produced by irradiation, is due to the presence of ergosterol. Tests with irridiated ergosterol have been astounding. A daily dose of 0.0001 mg. of irradiated ergosterol has cured and prevented rickets in rats kept on a rachitogenic diet. Irradiated ergosterol is the most potent antirachitic substance known, 5 mg. being equivalent to approximately 1 liter of a good cod liver oil. It has been found that vitamin D as it is secured in the irradiated sterols can be absorbed from the uninjured skin. Thus, therapy by inunction is presented.

Sterility is caused by vitamin E deficiency and the antisterility vitamins consist of lettuce, and embryo of wheat and other grains. Evans and Bishop reported a detailed study in which they found that female rats became pregnant but resorption of the young resulted from lack of vitamin E. Evans later reported that sterility occurs also in male rats Evans and Bishop demonstrated that wheat germ oil, the highest and least varying source of vitamin E known, prevented the death and resorption of the young.

It also protects the males against degeneration of the germinal epithelium. Through appropriate experiments they eliminated the lack of vitamins A, B, C, and D as factors influencing the resorption of the young. Mason reports a detailed study on the degeneration of the testes in rats on a sterility diet.

In vitamin E we have a substance specifically related to iron assimilation in a manner comparable to the relation of vitamin D to phosphorus and calcium metabolism. It is interesting to know whether each of the other mineral elements has a companion substance (vitamin) which must accompany it in order that physiologic utilization may be possible.

Von Jaksch's Disease. This is probably a secondary anemia whose contributing factors are prematurity, twins, improper feeding, and wasting diseases. Bunge has shown that infants are born with a reserve supply of iron stored in the liver, and this reserve is chiefly

XUM

stored in the last three months of intra-uterine life, that is to say, premature babies are born with an iron deficiency. This disease, occurring usually in children under two years of age, has been found to respond to supplemental feedings of egg yolk (early as 2 mo.), prune sauce and spinach (early as 6 mo.), liver pulp and scraped beef with saccharated carbonate of iron in 5 gr. doses t. i. d. (early as 1 year.)

Pernicous Anemia. The response to liver feeding in this condition is prompt and most gratifying. Investigators believe that vitamin E, which is specifically related to the assimilation of iron, is responsible for the result, since liver is rich in iron and vitamin E. On this basis, the use of iron citrate and a fat having the properties of wheat germ oil (a potent source of vitamin E) is suggested as a logical basis for the treatment of anemias. The following are some of the findings of Minot and Murphy in the treatment of pernicious anemia with a diet rich in liver: The earliest response to feeding liver on the part of the red blood cells is the appearance of a temporary, often marked increase of reticulocytes. This sign is rarely absent and then only under special circumstances. The increase of reticulocytes occurs within a few days and before there is a definite rise in number of red blood cells. It is not rare to see a blood count increase from one million to three million per cubic millimeter within three weeks. The rise in red blood corpuscles outstrips the accompanying rise in hemoglobin. The formed blood elements of the bone marrow also increase, the white blood cells sometimes to above normal, with an increased percentage of bone marrow leukocytes. The blood platelets co-incidentally increase to normal or sometimes above. Within a few weeks the eosinophiles increase to beyond 20 per cent and persist for many weeks. The excess bile pigment in the plasma, often within three weeks, shows an icterus index less than commonly observed in normal persons. Forty-four per cent (44%) of those who follow diet properly have a count of 5,000,000 and some reach as high as 6,500,000. Infection or other complications may account for low level in red blood cells in patients who are properly liver fed.

Multiple transfusions sometimes prevent the usual response to liver feeding, but, as a rule, the response is prompt in cases of previous transfusions. Two hundred grams of liver daily is followed by a quicker response than 100 grams, though improvement follows this amount.

General improvement is noted early, and is definite within ten days when the reticulocytes have reached the peak of their rise; also, within ten days, the lemon color of the patient decreases and the pink flush of the cheeks and fingers appears. Appetite improves and at times becomes ravenous. The tongue becomes normal, and the pain of rawness in the esophagus subsides. As the red blood corpuscles increase, the symptoms of anemia diminish and vanish when the count approaches normal. Thus, dyspnoea, edema, palpitation, weakness, irritability, cramps in the muscles and the like, diminish rapidly. Fever, when present, disappears within ten days.

Pellagra, goiter, hypopituitarism and other endocrine deficiency disorders deserve more than casual mention but time will not permit. However, I must make some reference to the hypophysis cerebri which, when attention was first called to it, was dismissed contemptuously as a vestigial organ to which no consideration was due. Later it became known to be associated with Marie's disease, and today we are acquainted with its function as regards skeletal growth, sex changes, etc., but, not the least important, it has furnished us with medicinal remedies that are indispensable in our armamentarium of therapeutic agents—pituitrin of the posterior lobe for obstetrical and surgical use, and the powdered extract of the whole gland which, when fed the hypopituitary case, gives certain relief. The pituitary headache is instantly relieved.

Here I would like to report a case, one of a half dozen I have had within the last few months: Mr. H., age 33, clerk for eight years, suffered off and on with intense bitemporal and suboccipital headache. No relief was found from any of the treatments he had taken. Specialists were consulted and surgical drainage of sinuses resorted to without relief. At last he was advised to go to Johns Hopkins for observation, with suspicion of a brain tumor. With this history he came to me last January, complaining of severe and constant headache between the temples and in the back of his head. He had numbness of whole of right side of body and right side of tongue, as if paralayzed. He was grouchy in his home and inefficient in his business. He expressed himself as knowing I was not of the specialty he should consult, that he belonged to the

head specialist, but thought he would like to see me before going to Baltimore, as I had been his family physician for the past several years, though I had never met him.

I put him on pituitary extract tablets (Armour) gr. 1 t.i.d. I told him at the time that if he did not get prompt relief I, too, was of the opinion he should go to Baltimore, since he appeared so dejected and seemed suffering such intense pain. The first dose was taken in the evening. He awoke the next morning entirely relieved and feeling like a two year old, as he expressed it. He has not felt the least return of his headache or numbness since—now ten months ago. He takes a fragment of a tablet once daily. B. W. and Co. within the past few months are putting out pituitary tablets in one-tenth grain size.

Another case is a girl of fifteen who has suffered constantly for the past several years with bitemporal headache, and who had undergone sinus operation two years ago without relief. She was put on pituitary extract tablets (Armour) grains 1 t.i.d. with immediate relief. She is now taking pituitary extract tablets gr. 1/10 (B. W. Co.) once daily and has had no return of the headache since last August.

405 *Medical Arts Building.*

CHRONIC LEAD POISONING.*

By WILLIAM A. SHEPHERD, A. B., M. D., F. A. C. P., Richmond, Va.

Numerous factors contribute to make the subject of chronic lead poisoning one of more than passing interest. It has been said that when one cannot explain a curious train of symptoms, always suspect the presence of syphilis, hysteria, or lead poisoning. Our standard text books all state that the condition is one of frequent occurrence and all of us, perhaps, recall from our student days the reference to the blue line on the gums as one of the more or less constant characteristic signs of the disease. Yet in a long experience, teaching in the dispensary and at the bedside, I have never had an opportunity to demonstrate this to students. Records of our largest local hospital, complete since 1915, and including some 50,000 patients, do not list a single case of chronic lead poisoning.

So variable and often so unusual are its manifestations that it is easy to infer that the lack of recorded cases of this disease is probably not so much due to its rarity in our community as to our failure to recognize it. If it is rare, then certainly its rarity is surprising, in view of the undoubted susceptibility of many individuals to the poison, the widespread use of the metal in one form or another, the more or less daily and intimate contact with it, and especially in view of the fact that very small quantities may at times suffice to produce symptoms. This is an industrial age; many industries employ lead in one form or another, and it is reasonable to expect that manifestations, either immediate or remote, of the damaging action of the metal should appear amongst the workers in such industries.

My own interest in the subject was awakened by a case occurring in my practice last January. This patient's symptoms were confined almost entirely to the gastro-intestinal system and could very well have been explained on the basis of peptic ulcer, cholecystitis, gallstones, or appendicitis. Leathers and Morgan report a case in which the same observation holds good. I desire to present here the record of my case.

This patient, Mr. L. J. M., was seen January 21, 1927; age forty-eight, an electrician; for the past three years has worked in a battery manufacturing plant. Married and has six healthy children. Wife has had no miscarriages.

For the past three weeks he has had what he describes as cramps in the right lower quadrant of his abdomen, also in the right hypochondrium, and at times a generalized aching of the abdomen. He is sometimes constipated for four or five days, also during the last few weeks he has been conscious of his heart's action. He thinks his kidneys are over-active, that he passes "lots" of water during the day and has had night voiding for the past month. In 1917 he was told that he had sugar in his urine. This cleared up in two weeks and he did not have a re-appearance of it. The last negative urine examination was six months ago. He has had several attacks of high temperature and aching in the past, the cause of these attacks unknown to him. He also has at present some aching in his legs; has had tonsillitis five or six times. All of his teeth were drawn last month.

Patient is of slender build, height five feet, seven inches, weight one hundred, twenty-six pounds, sallow complexion, stooping posture,

*Read by invitation before the Warwick County Medical Society, in Newport News, Va., October 24, 1927.

slow in his movements and speech, mentally sluggish.

The points of interest in his physical examination are:

1. Dark purple spots in gums at points where teeth were recently drawn.

2. Tenderness right hypochondrium and right iliac; also along the direction of the descending colon.

3. Heart rate 92; otherwise negative.

4. Sluggish patella reflex both legs, other reflexes negative.

5. No palsy or wrist drop; no tremor; no tenderness along the musculo-spiral, anterior tibial or popliteal.

X-ray examination indicates adhesions around the gall-bladder resulting in distortion. No evidence of duodenal ulcer, or calculi. There is general delay in intestinal motility, appendix contains foreign matter at its tip and is relatively narrow toward base.

BLOOD

R. B. C.—3,570,000
Hb.—70 per cent
W. B. C.—12,100
P.—66
L.—29
M.—5.

Numerous stipple cells; slight anisocytosis. Wassermann is negative.

Urine negative—except for presence of lead, in considerable quantities as shown by concentrating 500 c.c.

It was felt that the symptoms in this case were probably due chiefly to the chronic lead poisoning rather than to pathology of the gall-bladder or the appendix. Patient was put on ten grain doses of potassium iodide three times daily with morning purge of magnesium sulphate and told to discontinue working in a battery factory. He did not carry out the latter instruction but reported at the end of ten days that he had been more careful as to his hands and had been taking the iodide and salts, regularly, and had been free from symptoms for three days. Examination of his urine at this time failed to reveal lead. Seen one month later he was still free from symptoms. In his work he is accustomed to handling red oxide of lead in making the positive plates of a battery and also lead sulphate used in forming the negative plates. Besides this he is exposed to the fumes arising from "burning on" the lead terminal of a battery. This latter exposure he has avoided during the period of treatment. It is interesting that he was exposed for three years before showing symptoms. Osler refers to a case of a man who had been a lead worker for fifty-two years, before developing symptoms.

Authorities agree that the respiratory tract is the most important point of entry; next the gastro-intestinal, and lastly the skin. In connection with the subject of entry through the respiratory system, there is evidence that the fumes created by the burning of lead, as in battery manufacture, are *not* a source of danger. Apparently, air becomes poisonous only through particles of dust bearing soluble salts of lead. J. P. Leake showed that in the dust of garages, lead may constitute as much as 1 per cent of the inorganic matter, and that workers in such places had more than the normal amount of lead in their stools and definite changes in their blood. Some of the industries showing lead in the dust of their premises are, in order of incidence:

1. Cracker and cake factory
2. Underwear factory
3. Shirt and overall factory
4. Machine and shop factory (brass)
5. Retail grocery
6. Cigar factory
7. Dairy
8. Machine shop (iron and steel)
9. Wooden heel factory
10. Tailoring and pressing shop
11. Mail bag factory
12. Ice cream factory.

The well known poisonous effect of the air in the neighborhood of lead ore smelting furnaces is, for the most part, due to inhalation of particles of lead carbonate in the air rather than to the vapors arising from the heated lead.

The occupations into which lead enters as a hazard are almost innumerable. In addition to those in which lead products are handled with known hazards may be mentioned employees in enamel factories, sailors, structural iron workers, ship builders (of local interest), printers, and those engaged in the manufacture of lead storage batteries.

Lanza, in discussing a paper by Leathers and Morgan, brought out the point that lead poisoning is frequent, not so much in lead and paint plants where the hazard is recognized and precautions taken against it, as in those plants where the use of lead is incidental to

the main process. In one instance cited by him, two hundred men were engaged in lead soldering in one part of a building. The fumes passed from this room to another group amongst whom no precautions were being taken. In this latter group the disability from gastro-intestinal troubles was four times as great as from respiratory troubles. These men consulted their family physicians and yet not one case of lead poisoning was certified to the health authorities or reported on an insurance certificate. Lead poisoning had been occurring in this plant for a number of years. It is remarked that these facts may indicate how widespread and unrecognized lead poisoning may be in some communities.

Lead in drinking water, resulting from the use of lead pipes, is by no means negligible. During this year, Hoffman has reported deaths from lead poisoning in rural districts of New England, resulting from lead-dissolving waters in rural water conducted through lead pipes. Three cases have been recently reported on one farm where the water contained only four parts per million. Cosmetics, hair dyes, false teeth, lead and opium pills, diachylon ointment, acid wines and ciders have all, at times, been positively incriminated. The definitely toxic action of lead on the blood and on the kidneys is very interestingly demonstrated by the effects of colloidal lead lately injected for the cure of cancerous tumors. Ullman reports that the poisonous effects of such injections come on at times acutely, in two instances requiring transfusion. In three cases, the hemoglobin fell 50 to 70 points; the red blood cells dropped one-half, following the injection of 90 mg. of colloidal lead. Stippling of the red cells was constant. Acute nephritis was also practically constant.

As has been intimated, the symptoms of lead poisoning are manifold and, in addition to the much emphaized colic occurring in 75 per cent, and blue lines on the gums in 90 per cent, may consist of pallor, g i d d i n e s s, palpitation, dyspnoea, transient headaches, constipation alternating with diarrhoea, pains in the joints, motor weaknesses, especially wrist drop, tremors, paresthesias, mental symptoms, and even convulsions and hallucinations. The best check on the diagnosis is found in the stippling of the red cells. This is practically constant and bears the same relation to lead poisoning as the Wassermann does to syphilis. It occurs, of course, in other conditions where the question of lead is not an issue, and may also be found in lead workers without other symptoms. Leake states that more than twenty stipple cells per hundred thousand should be considered as indicating danger. In my experience, the stippling of red cells is best brought out by employing a smear stained with one of the methylene blue blood stains, such as Wright's or Hasting's, rather than with hematoxylin. The specimen is treated as for the ordinary differential count. The rather deep bluish spots will appear sharply when the red cell is in sharp focus, and will be seen to be uniform in size in a given cell, though in different cells the size may vary. They are generally even distributed throughout the cell but may be somewhat thicker at the rim. The cytoplasm, whether by contrast or not, seems to be paler than that of neighboring cells. (I have a slide from a case of chronic lead poisoning under the microscope which will illustrate the points I have made concerning stippling.) As a further check on the diagnosis, the demonstration of lead in the urine may very properly be undertaken. This is accomplished by collecting 500 c.c. of urine, acidifying with 70 c.c. of sulphuric acid, decolorized by slowly adding 20 gms. of potassium persulphate evaporated by boiling to one-half original volume and diluted with equal volume of alcohol. The insoluble sulphate precipitates in 5 to 6 hours. This is collected on filter paper and washed off with 10 c.c. distilled water. Wash water is clarified by adding crystals of sodium acetate.

This now contains all the lead in 500 c.c. as acetate and may be precipitated as lead sulphide by sulphuretted hydrogen, producing a yellowish brown discoloration, the intensity varying with the amount of lead.

Potassium iodide is spoken of as setting lead free from the tissues and it is stated that lead may not be found in the urine until this drug is administered. This was true in the case reported to you to night and the specimen in the test tube was obtained from 500 c.c. of urine of this patient, treated as I have outlined, following three days' administration of ten grains of the drug three times a day. Aside from the more or less obvious preventive measures where there is frank exposure, this drug constitutes the best treatment. Morphine and not purgatives should be given for the colic and, contrary to the usual action of this drug, will often be found to move instead of constipate

XUM

the bowels, due, no doubt, to relief of the intestinal irritation and spasm.

206 *West Grace Street.*

DIGITALIS THERAPY.*

By F. C. RINKER, M. D., Norfolk, Va.

Our present knowledge of the use of digitalis in disease is the result of experiments on man by MacKenzie and Einthoven. They used the sphygmocardiogram and electrocardiogram in determining the results of digitalis on the circulation.

Digitalis is employed, in medicine and surgery, in order to slow the rate of and strengthen the heart muscle and through this medium to effect the general circulation.

Before considering the more important conditions in which digitalis in indicated, let us first discuss for a moment the *dosage* of the drug.

Eggleston published a method of calculating the dose of digitalis for a given body weight in 1915. He found that the average amount required to digitalize the human heart is 0.0146 times the number of pounds of body weight expressed in grains. This is equivalent to 9/40 grain of powdered leaf or 2½ minims of the tincture per pound.

Having determined the amount of the drug necessary for a case of known weight, there are two methods of administration open for election; first, the quick or large dose method; and second, the slow or small dose method.

The first method is desirable in severe cases of cardiac decompensation and in the serious infections, such as pneumonia. It is important that these cases should be under hospital observation where they can be seen frequently on account of the possible onset of untoward symptoms of digitalis poisoning. The writer prefers to give the desired amount of digitalis in twenty-four to forty-eight hours, giving the drug at six hour intervals in equal quantities. Following the completion of this medication, no digitalis should be given for forty-eight hours. At this time, if the desired cardiac result has not been accomplished, small doses may be started at four hour intervals and continued for some time with safety.

The second, or small dose method, is advisable in all ambulatory cases and may be used in all of those cases not requiring rapid digitalization. By this method, one may gradually digitalize a heart over a period of days or even weeks, using a few minims of the tincture or one-half to one grain of the powdered leaf at a dose three or four times daily.

Probably one of the greatest fallacies in digitalis medication is the mistake, so frequently made, of prescribing that the drug be given in drop instead of minim doses. Drops are inaccurate according to the size of the pipette and the conditions of the surrounding atmosphere. I have seen droppers that would require 100 to 325 drops to equal one dram. Thus when prescribing digitalis, we should always order that it be measured either in a graduated pipette or in a minim measure.

A fresh preparation of digitalis is also of importance; hence we are advised by pharmacologists against using a drug that has been allowed to deteriorate by age or by being exposed to the air for a long time. The tinctures are now dispensed in one ounce hermetically sealed bottles in order that the drug may be prevented from losing potency before it has been used.

Digitalis may be administered by mouth, by hypodermic injection, and by rectum. If given in sufficient dosage, it will act equally and efficiently by either method. Pardee, Robertson and Eggleston have proven by electrocardiographic studies that digitalis effect begins in from one and one-half to five hours after it is administered. Should a quicker effect than this be desired it is advisable to give strophanthin intravenously. Levine, Cunningham, Cohn, Levy, Clarke and others, report serious toxic results from the use of digitalis given intravenously and all recommend the use of strophanthin or ouabain when this route of administration is necessary.

One should be always on the lookout for signs of overdosage. These may be divided into two groups. First, those related by the patient as follows: Nausea, vomiting, diarrhea, heart consciousness with or without the sensation of "skipping", headache, dizziness and disturbances of vision. It should be remembered that the nausea may be due to something other than the effect of digitalis on the heart or vomiting center. Thus this one symptom alone should not be held as a criterion for discontinuing the drug.

Second, those signs as determined by phy-

*Read before the Seaboard Medical Association of Virginia and North Carolina in Norfolk, Va., December, 1927.

sical and electrocardiographic examinations, which are:

1. A sudden reduction in pulse rate, resulting from overaction in the sinus node.

2. The onset of extra-systoles due to overaction of the drug on the auriculo-ventricular conduction tissues causing an increase in the P-R interval resulting in partial or complete heart block.

3. Over-excitability of the auricular or ventricular tissues may cause extra-systoles or the T-wave may become inverted in one or more leads of the electrocardiogram.

Let us now consider the effects of digitalis on some of the specific cardiac diseases.

AURICULAR FIBRILLATION is more dramatically relieved by digitalis than is any other condition. In this disease there is an irregularity between auricular and ventricular systole. The auricles are in fibrillation and these minor stimuli being "shunted" from one portion of the auricular tissue to another keep up a constant irritation to the ventricular tissues, thereby increasing the ventricular rate in an irregular way. Digitalis is used to bring about a restraining influence of ventricular action by reducing the number of impulses passing through the connecting tissues (the auriculo-ventricular bundle). This produces partial heart-block and allows for longer rest periods to the ventricles, at the same time aiding coronary circulation, which is at its best during diastole. The drug should be used in these cases in massive amounts but it should be greatly reduced or stopped when the ventricular rate reaches between seventy and sixty beats per minute.

In AURICULAR FLUTTER, digitalis acts by cutting out some of the impulses going to the ventricles and will frequently bring on auricular fibrillation before the condition has been brought back to normal.

CARDIAC DECOMPENSATION without flutter or fibrillation is, in the opinion of the writer, usually benefited by using digitalis. There exists, however, considerable difference of opinion as to the value of the drug in these cases. Cohn, Levy, Mackenzie, and Pratt believe that it is of little aid, while Rupe, Christian, Pardee and McCulloch advise its use. In many cases digitalis rarely affects the cardiac rate but in most of them there is decided improvement in signs and symptoms after digitalis therapy is well under way.

In PAROXYSMAL CARDIAC TACHYCARDIA, in which the impulses have their origin in the sino-auricular node or auricular tissues, digitalis is of inestimable value. On the other hand, in cases of VENTRICULAR TACHYCARDIA, in which the beats originate in the ventricular tissues, the drug is of no value and may aggravate the condition.

PREMATURE CONTRACTIONS may be caused by digitalis but they do occur in hearts which have not received the drug and, of these cases, some will be relieved by administering it.

In cases of HEART BLOCK and SINUS BLOCK digitalis should not be used.

There are certain conditions met with in medicine which should receive digitalis, because of needed cardiac support, in order to cope with severe toxemia. The more important of these diseases are pneumonia, diphtheria, sepsis, pulmonary edema, etc.

Lastly, digitalis has an important place in surgery in furnishing strength and support to hearts which have suffered from the shock of operative procedure. With this in mind it is earnestly urged that more cases being prepared for surgery be digitalized beforehand.

Sarah Leigh Clinic.

HEADACHES OF NASAL ORIGIN.*

By HERBERT R. ETHERIDGE, M. D., Norfolk, Va.

There are four conditions in the nose which, according to Greene, may cause headaches:

1st—Acute inflamamtion of the nose or sinuses.

2nd—Chronic inflammation of the nose or sinuses.

3rd—Anatomic variations causing pressure.

4th—New growths of the nose and accessory sinuses.

In order to better understand the distribution of pain in nasal conditions, it is well to briefly review the sensory nerve supply of the nose. The sensory nerve supply of the nose is derived from the first and second divisions of the trigeminus. The anterior ethmoid, a branch of the first division, supplies the upper anterior part of the nasal chamber and sends fibers to some of the ethmoid sinuses and frontal sinuses. The remainder of the surface of the nose and accessory sinuses is supplied through the spheno-palatine (Meckel's) ganglion from the second division. Motor and

*Read before the Norfolk County Medical Society, October 31, 1927.

sympathetic fibers also pass through Meckel's ganglion from the vidian nerve which is made up of fibers from the great superficial and the deep petrosal nerves. Sensory fibers also go to the orbit, palate, naso-pharynx, tonsil and tongue.

Pain in acute or chronic sinusitis may be due to toxic or to mechanical causes, or to both, but is best explained by pressure upon the sensory nerves.

The pressure may be due to swollen tissue or to a collection of pus in the sinuses, or to both. It seems unnecessary to discuss separately headaches due to acute and chronic affections of each sinus as in the acute cases pain is usually more acute, and in the chronic, less acute. The location of pain is usually the same. Then, also, there are usually many acute exacerbations in the chronic cases.

Frontal Sinusitis.

In a typical case of frontal sinusitis, pain is located over the distribution of the sensory nerve supply of this sinus, that is, in and about the eye and over the supra-orbital ridge. It may be a dull or lancinating pain. Usually, like all typical sinus pain, it is diurnal, beginning each day as a dull ache shortly after arising, reaching its intensity about noon, and gradually subsiding, to reappear the next day. In severe cases pain is more or less constant, but is even then worse during the day.

Ethmoiditis.

Infection of this sinus, at least infection of the anterior ethmoid, would be expected to produce pain in the same location as infection of the frontal, as it is supplied by the same sensory nerve and is the parent of the frontal sinus. However, their locations are different, and swelling of many cells situated external to and within the middle turbinate would be expected to produce even more pressure symptoms than infection of the frontal sinus which, like the antrum, is usually one bony cavity. Also, the frontal sinus is, so to speak, extra-nasal, and the ethmoid, intra-nasal.

Hence, pain due to the ethmoid is not typical of its nerve supply. It is located as a rule over the parietal region, and is a dull pressure rather than a pain. When severe, it may extend over the temporal region and the vertex. It may also be between the eyes, above the root of the nose as though a wedge were prying the nerve apart in the turbinate region. If the entire ethmoid is involved, or the posterior ethmoid alone is involved, then we will be apt to get involvement of Meckel's gangloin with reflex pain referred to mastoid, occiput, and possibly to shoulder, arm and fingers.

Maxillary Sinusitis.

Pain from infection of this sinus is probably the most atypical of any of the sinus infections. According to Skillern, typical pain from an antrum infection is directly over the frontal sinus on the same side,—at times so severe that many frontals have been opened and found not diseased. However, when pain is referred to the frontal, there usually is a feeling of distention or pressure over the maxillary, yet tenderness is scarcely ever elicited over the maxillary except in severe acute conditions. According to Braswell and others, the pain in antrum sinusitis is located in the cheek, upper jaw, and may be referred to the teeth, eye, supra-orbital region and even to the ear. This seeming variation of the distribution of pain only goes to show, in my opinion, that there are so many factors concerned in infection that one case will cause involvement of Meckel's ganglion alone and give reflex symptoms. Another case with the same sinus involved will not affect Meckel's ganglion, and those with infection and no discomfort will affect neither Meckel's nor the sensory fibers supplying that sinus.

Sphenoiditis.

Next to pain of frontal sinusitis, sphenoiditis is probably the most typical. There is a feeling of pressure in the occiput, and if Meckel's ganglion is involved, which is to be expected from its position, there will be reflex pain to the mastoid process, temporal region, and possibly pain in the shoulder, arm and fingers. In other words, we have the sphenopalatine syndrome of Sluder. A very constant location of pain is in the vertex especially in quiescent periods between paroxysms. The pain here, as in most types of sinusitis, is paroxysmal and comes on at any time of the day, and does not remit like pain due to frontal sinus infection. Skillern claims that pain occasionally occurs directly below the eye in the region of the infra-orbital notch. Dizziness in stooping is more constant here than with infection of any other sinus.

XUM

In regard to pain in general relative to sinusitis, this occurs to me: 1st—There is a vast difference in the description of pain relative to infection of a specific sinus by a number of equally good rhinologists.

2nd—We ourselves have seen apparently equally severe an infection in two individuals with the same sinus involved, in which one will suffer severely from pain, while the other will have scarcely any or no pain. How can we explain this difference?

I shall attempt to give my views on the subject if you will permit me:

1.—There are, of course, no two noses exactly alike, that is, in size, shape, position, and size of sinuses, or even in the number of cells in the cellular or partly cellular sinuses, that is, the ethmoid and at times the frontal, maxillary and sphenoid. Also, there are differences in the size and position of ostia and relation of depth, sensitivity and distribution of nerves. We have all noticed that in cases with deflected septa sinusitis, especially of the chronic type, is much more frequent on the obstructed side, and, if we cared to look closely, I am sure we would find that acute conditions are more frequent on the open side, but here drainage is better and cure more spontaneous. Therefore, it is perfectly conceivable that in the two hypothetical cases mentioned above, the one that suffered severe pain has not the room for expansion, due to inflammation, as the one that had little or no pain. A patient with a wide nose, with a surplus of room in the nasal chambers, seldom ever has nasal obstruction complete enough, even during a cold, to produce pressure pains, while another with a deflected septum, or a straight septum with a narrow nose and little room in the nasal chambers, gets pressure symptoms from the slightest cold.

2.—With our present methods of diagnosis, it also oftens happens that there is one sinus which is manifestly infected, and one or more which are also infected but are not in evidence, and we necessarily are apt to get reflex pain from all infected sinuses, but our attention is centered on the sinus which is attracting our attention and the pain would necessarily be atypical for that sinus. Just as we seldom have a severe middle ear infection without some involvement of the mastoid, so I believe we seldom have a severe single sinus infection without some change in one or more of the other sinuses, and the secondary sinuses may be so situated that the symptoms are atypical of the known infected sinuses.

3.—Anatomic variations likewise produce pressure headaches. Chief among this type of cases is vacuum frontal headache described by Sluder. Many noted rhinologists have doubted the existence of this condition, but as far as it is possible to demonstrate, I, for one, have seen several. As the frontal sinus is the best anatomically situated for this condition to occur, it is more often seen in this sinus. Just as the middle ear with an intact drum when the Eustachian tube becomes occluded is gradually relieved of the confined air, so, also, the frontal sinus when the infundibulum becomes occluded is relieved of its confined air and partial vacuum is formed, which produces pain very similar to frontal sinusitis, except that pain comes on rather more gradually and subsides immediately the negative pressure is relieved. Others have described vacuum headache from occlusion of all or most of the other accessory sinuses; I have seen such a condition occur in the sphenoid sinus.

The most common type of pressure headache is caused by pressure in and around the middle turbinate, which I happen to know from personal experience, if you will pardon a personal reference. This condition is usually very typical; one becomes more or less suddenly aware that one side of the nose is becoming occluded. There is a gradual feeling of fullness and pressure around the bridge of the nose on the side in the location of the middle turbinate. It feels as if a wedge had been placed in this location. The eye on this side becomes sensitive and slightly sore; soreness extends downward under the eye on the same side and into the temple. Immediately the pressure is relieved, the symptoms promptly disappear.

4.—New growths of the nose and accessory sinuses may cause pain, even in the early stages, especially if they are so located that they produce pressure. If they do produce pressure, the distribution of pain will be necessarily influenced by their location. However, tumors may reach the inoperable stage before pain is produced. The often-seen benign polyp may or may not produce pain, but here we have a condition different from new growths in general. It is pretty generally admitted that polypi do not form *per se;*

XUM

there is always an underlying diseased condition, and polypi are produced by cystic degeneration of the mucosa. If the underlying condition is fairly active and associated with polypi, or if polypi have formed, for instance, in the mucosa of the ethmoid cells, pain is apt to occur. If not very active, the presence of polypi alone is not apt to produce pain, as they are usually very compressible and conform readily to the open spaces in the nose, and seldom produce pressure.

Headache is probably the most universally distributed symptom of mankind, and if we can so classify it that its cause can be more readily found, then we shall be in a better position to relieve some of the sufferings of our race.

REFERENCES.

Greene, D. C.: The Rhinologic Aspect of Headaches and Cranial Neuralgias. *Annals of Otol., Rhinol., and Laryngol.*, 1925, 34:715.

Sluder: Headaches—Eye Disorders of Nasal Origin. St. Louis: Mosby. 1919.

Skillern, Ross Hall: Headaches—The Nasal Aspect. *Annals of Otol., Rhinol., and Laryngol.*, 1925, 34:917.

Braswell, James C.: The Nasal Aspect of Headaches. *The Laryngoscope*, 1927, 37:317.

515 *Medical Arts Building.*

X-RAY IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.*

By JOHN A. HAWKINS, M. D., Danville, Va.

The X-ray is probably the most valuable aid we have today in the diagnosis of pulmonary tuberculosis. Its proper application in the hands of experienced, yet not too enthusiastic, operators will many times clear up a doubtful chest diagnosis. There is no such thing as "independent" X-ray diagnoses of lung conditions, and they should not be expected by the clinician. To derive the most information about a patient who is suffering from some lung infection, it is imperative that the clinician and the roentgenologist work hand in hand to this end.

A carefully taken history should be available to both, and it should be thoroughly studied. The physical findings should be checked with the X-ray findings and an honest effort made to explain any gross differences in findings.

The X-ray examination should be done with the patient in the erect position. The fluoroscopic examination is important and will give information about the size, shape and position of the heart and aorta, the shape, position and movements of the diaphragm, and the lighting of the apices on coughing. It will reveal only gross lesions of the lungs, but films will be required to demonstrate the fine detail so necessary in chest diagnosis. Exposure time should not exceed one-half second for adults and one-twentieth to one-tenth second for infants and small children. Stereoscopic films are, in my opinion, a modern day necessity, and every modern laboratory should be equipped with apparatus for doing such examinations with a minimum of discomfort to the patient. A few seconds more or less means but little to those of us who are blessed with two good lungs, but a fraction of a second means much to a patient who is breathing with half a lung, or less. The apparatus should be arranged and the factors should be correct before the patient is placed in position on the plate changer.

It is most difficult to describe the X-ray appearance of a normal lung. Many factors which are met with in every-day life materially alter the lung appearance. Repeated acute infections of the respiratory apparatus, long exposure to dust or smoke, and old age cause marked increase in the density of the hilus and bronchial shadows. In such cases, the history is valuable and its importance is readily seen. The hilus shadows vary within wide limits normally, both in size and density. They give much more information in infants and children than in adults. A diagnosis of hilar tuberculosis may often be made with the X-ray findings alone in these little patients. The lung tissue does not cast a shadow in the normal lung, and the bronchial shadows are, as a rule, not visible.

One of the first changes noted in tuberculosis is a prominence of the bronchial markings. These extend well out into the lung substance and frequently "beading" along their course is seen. In the moderately advanced stages these shadows may extend nearly to the periphery, and small triangular areas of increased density are seen with their base toward the periphery. It is in this stage that rales are first heard and the diagnosis by the stethoscope made possible. Before this stage the diagnosis rests, not on physical signs in the lungs, but on a carefully taken history, temperature chart

*Read as part of a symposium on Tuberculosis at the Institute, held in Danville, Va., in January, 1928.

and the X-ray findings. In the more advanced stages these triangular spaces of increased density may coalesce and go on to cavity formation. We are not concerned here with the diagnosis of tuberculosis beyond the stage of cavity formation. Usually before this stage is reached the diagnosis may be made by the average layman.

The purpose of these Institutes now being sponsored by the State Board of Health is to educate the physicians of the state in the diagnosis of "early" pulmonary tuberculosis. Personally, I appreciate very much the efforts of Dr. Harper and the Health Department. The talks and demonstrations have been most instructive to me, and I feel that I have a better understanding of tuberculosis now than I have ever had.

May I, in closing, urge a closer co-operation between the family physician, his consultant, and the roentgenologist?

TULAREMIA.

Report of an Interesting Case

By H. G. LONGAKER, M. D., Newport News, Va.

L. C., No. 748 25th Stret, Newport News, Va. Age 38, Negress-Cook.

WORKING DIAGNOSIS.—Infection left index finger.

FAMILY HISTORY. — Husband living and well—ten children, six of whom died in infancy and four are living and well.

The past medical history is negative with the exception of ten pregnancies and an operation in 1919 the details of which she does not know and only thinks that she was operated upon for a tumor.

PRESENT ILLNESS.—Eight days ago, November 22, 1927, the patient stuck a splinter in the left index finger. She thought she removed the splinter and dismissed the affair with no further thought. The history at a later date develops the fact that on November 28, 1927, the patient dressed six rabbits. On November 29th, she was suddenly taken sick with a severe headache and a temperature of 105. She was admitted to the hospital.

PHYSICAL EXAMINATION was entirely negative with the exception of a mid-line abdominal scar and the left index finger. This finger appeared normal—there was no redness, no heat and no swelling. It was apparently very sore to the touch. The epitrochlear gland on this extremity was very large and tender. The blood count was as follows:

Hemo.	80%
R. B. C.	4560000
W. B. C.	12200
Polys.	78
S. L.	18
L. L.	4

The urine was negative with exception of a number of pus cells.

December 2, 1927. A small incision was made in the tip of the left index finger and about two drops of pus escaped. The finger was dressed with ichthyol.

December 4, 1927. Finger very sore—no drainage—opened wide under novocain. No pus and no splinter found. Wet dressings applied. The epitrochlear and axillary glands were very large.

December 5, 1927. The general condition of patient is not good—a very definite pblebitis of the veins of the left arm is present. The entire arm was dressed with hot saturated solution of magnesium sulphate.

Blood count, W. B. C. 11,600; Polys. 75; S. L. 15; L. L. 10. Blood culture—Sterile.

December 8, 1927. Wassermann negative; Widal negative.

December 11, 1927. Condition about the same. There is a large mass palpable above the elbow on the left arm. The patient was taken to the operating room and under novocain this mass was explored in all directions. No pus was found.

December 16, 1927. Condition unchanged. Left index finger was X-rayed and bone found to be normal.

December 17, 1927. Complete physical examination was negative with the exception of tenderness on moderately deep palpation over the region of the gall-bladder. Blood count W. B. C. 10,200; Polys. 73; S. L. 20; L. L. 6; Eos. 1. The urine showed a cloud of albumen and a moderate number of pus cells.

On December 19, 1927, patient was cystoscoped. The bladder was found to be normal with exception of a mild degree of congestion. Catheterized specimens from each kidney were normal on examination. The appearance time of the dye was three minutes on the right side and three and one-half minutes on the left side.

December 21, 1927. Sutures were removed from wound above the elbow. This wound

XUM

healed by primary union. The finger is discharging a small amount of pus.

December 31, 1927. Condition not good. Patient is very weak—having myocardial attacks—pulse rate at times as high as 180-200 per minute. Stimulation with whiskey, strychnia and digitalis. On this date the second blood culture was sterile.

January 2, 1928. Blood count W. B. C. 10,800; Polys. 70; S. L. 17; L. L. 12; E. 1.

January 9, 1928. Examination of eyes, ears, nose and sinuses was negative.

January 10, 1928. Physical examination negative with exception of some tenderness over the region of the gall-bladder. Heart action is again good. Pulse rate 100-110 per minute.

January 16, 1928. X-ray studies showed what was thought to be a very large gall-bladder. After consultation it was deemed best to subject the patient to an exploratory operation suspecting that the gall-bladder was diseased and possibly accounting for the patient's prolonged illness.

January 23, 1928. Operated upon. A straight upper abdominal incision about 4 ins. in length was made over the middle of the right rectus muscle. The gall-bladder was exposed and found to be bound to the liver, transverse colon, omentum and pylorus by fairly firm adhesions. The gall-bladder was very large and showed a very firm adhesion around the middle of it which gave it an hour-glass appearance. The gall-bladder was removed. It contained some bile which had a watery appearance. The lining of the gall-bladder was inflamed and unquestionably pathologic.

January 24, 1928. Reacted from operation in good condition.

January 26, 1928. Condition improving.

February 2, 1928. Sutures removed—wound healed by primary union. Condition good. Blood sent to Hygienic Laboratory in Washington for examination for Tularemia.

February 3, 1928. Report from Dr. Ed. Francis at the Hygienic Laboratory: Blood from L. C. positive for Tularemia dil. 1-160.

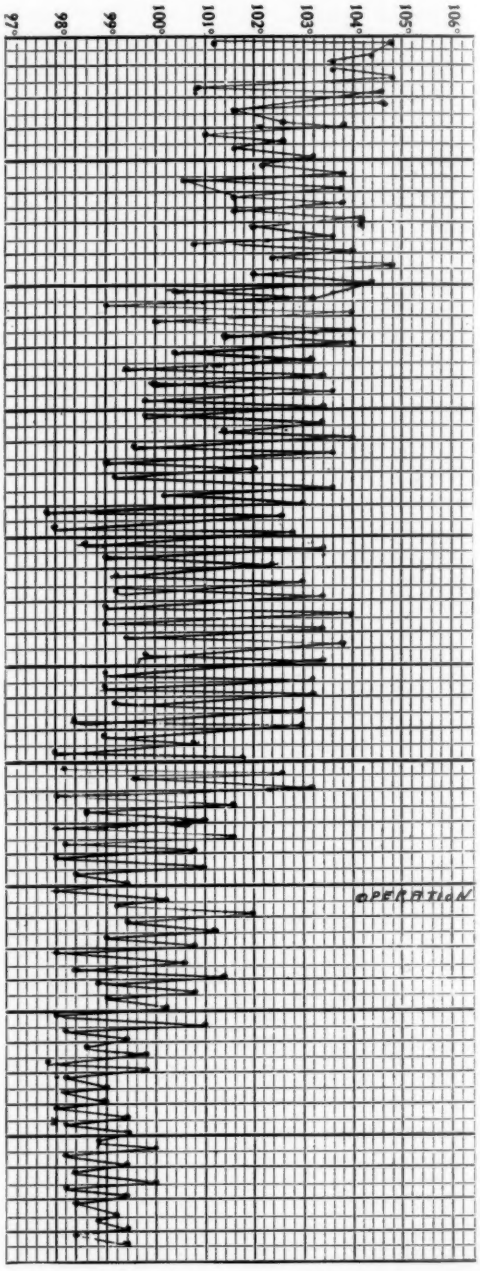
February 5, 1928. Condition improving. Temperature normal for first time.

February 7, 1928. Out of bed for half hour.

February 11, 1928. Out of bed for two hours.

February 13, 1928. Out of bed all day.

COMMENT.—This patient presented all the symptoms ascribed to Tularemia with the exception of the sweats so frequently described.



Temperature chart of Lavimia Claybourne from November 30, 1927, to February 14, 1928, inclusive, showing high and low temperature for each of the 77 days.

The temperature seemed to have been more persistent and higher than usual and the accompanying chart does not show the initial rise, remission and secondary rise which is described in so many cases.

The patient presented evidences of gall-bladder pathology. Considerable consideration was given this phase of the situation before operation was advised. After the cholecystectomy the patient made a continuous and uneventful recovery. Reference to the accompanying temperature chart is rather striking in this respect. The inference is that the pathology in the gall-bladder was a factor in prolonging the case.

Dr. Edward Francis of the U. S. Public Health Service in a paper read before the Conference of Illinois Health Officers at Springfield on October 13, 1927, cites a case of Tularemia manifesting symptoms of cholangeitis that died eight days after being subjected to an exploratory abdominal incision.

ANATOMY OF THE LUNGS AND PATHOLOGY OF PNEUMONIA.*

By J. M. BAILEY, M. D., Hopewell, Va.

I have been asked to give a synopsis on "Anatomy of the Lungs and Pathology of Pneumonia". We will first take up:

Anatomy of the Lungs

The first trace of the lung is seen on the third day of embryonic life as two hollow outgrowths from the ventricle side of the esophagus. By the meeting of these two lateral outgrowths, the esophagus is divided into two parts; the upper is the esophagus proper, and the lower part into which the lung rudiments open will be the trachea. As the two lung rudiments grow backward the mesoblast collects around them as two lobes. It is from the mesoblast that the elastic, muscular, cartilaginous and other tissues of the lungs and bronchial tubes are formed. The mesoblast is the middle layer of the three germ layers.

Each lung is invested by a delicate serous membrane, the pleura, and the pleura is divided into two layers,—the visceral layer, which lies next to the lungs, and parietal, which lines the inner surface of the thorax. The space between the two layers is called the pleural cavity, which contains a small amount of clear fluid normally. Each pleura is a closed sac, one occupying the right and the other the left half of the thorax. The two pleural sacs do not meet in the mid-line except anteriorly opposite the second and third pieces of the sternum. The space between the pleural sacs is called the mediastinum, which contains all the thoracic viscera except the lungs. The lungs are the essential organs of respiration, two in number, placed one on each side of the thorax, separated from each other by the heart and contents of the mediastinum.

Each lung is conical in shape and presents for examination an apex, base, three borders, and two surfaces. The apex extends from the first rib upward into the neck about two inches. The base is concave and rests upon the convex surface of the diaphragm. The external surface is smooth and convex and corresponds to the form of the cavity of the thorax. The inner surface is in contact with that portion of the pleura which forms the lateral boundary of the mediastinal space. It presents a deep concavity which accommodates the pericardial space. Above and behind this concavity is a triangular space, the hilum, which contains the structures which form the roots of the lungs. The chief ones are, from before backward on both sides, the pulmonary veins, pulmonary artery, and the bronchi and bronchial vessels. The left lung is divided into two lobes by an oblique fissure which extends from a little above the lower end of the spine of the scapula downward and forward with its convexity downward and terminates at the junction of the fifth rib with the sternum. The right lung is divided into three lobes by two fissures. One extends from the middle of the spine of the scapulae downward and forward to the junction of the third rib with the sternum. The other fissure extends from the middle of the spine of scapula downward and forward to the junction of the fifth rib with the sternum.

The above boundary lines of the lobes are only approximately correct as they vary to a slight extent in different individuals.

The bronchi are a continuation of the trachea, and are at a level with the fifth dorsal vertebra, extending into the lungs. The right and left bronchi are not similar, but differ in that the right is shorter, larger and more nearly horizontal, whereas, the left has a considerable obliquity downward.

*Read before the Post-Graduate Medical Society of Southern Virginia, December, 1927.

XUM

Pathology of Lobar Pneumonia

Pathologically lobar pneumonia is characterized by inflammatory changes which take place in the lung, due to the action of the pneumococci, and it is divided into the following stages: Stage of engorgement, red hepatization, gray hepatization, and resolution, but it is rare to find solely the lesions characteristic of a given stage.

Stage of Engorgement.—This is the earliest manifestation of pneumonia and is rarely seen at autopsy except in spreading pneumonia or when the patient dies from some other cause. The change is vaso-dilatation with engorgement of the parenchyma and an exudate of serum with a few red corpuscles and leucocytes into the alveoli. Microscopic examination shows engorged and distended capillaries, arteries and veins, swollen alveolar epithelium and coagulated serum. This stage lasts but a few hours before red hepatization develops.

Stage of Red Hepatization.—In this stage the involved lung is reddish brown in color, heavy and non-air containing. It is found to be friable, firm and airless. When scraped with a knife there is a little moisture and fibrinous plugs from the alveoli and bronchi often rise above the surface. On microscopic examination, the alveoli are distended with an inflammatory exudate which is rich in fibrin, pneumococci, red cells, leucocytes and desquamated epithelial cells. The alveolar wall, the peri-bronchial and peri-vascular tissues are edematous and infiltrated with leucocytes, and the small bronchi are plugged with fibrinous exudate. The blood vessels may be patent, or compressed, and sometimes occluded with thrombi. The lymphatics are distended with serum, fibrin and leucocytes.

Stage of Gray Hepatization.—In this stage the lungs are grayish in color, enlarged, firm and non-air containing. The surface is covered with a plastic exudate which can be peeled off in layers. The cut surface is mottled, the variation in color being due to the leaking of the red cells and the metamorphosis of the discharged hemoglobin. The tissue is moist, and a turbid fluid can be expressed from it.

Microscopic examination shows the alveoli closely packed with an exudate consisting mainly of leucocytes, pneumococci with a little fibrin, and a few red cells.

Stage of Resolution.—In this stage the lung is soft, friable and jelly-like. Microscopic examination shows a disintegration of the cells of the exudate, which are often quite fatty. The exudate is liquefied by the action of proteolytic enzymes furnished by the leucocytes and the bulk of the inflammatory material is removed by absorption.

The stage of repair of the alveolar epithelium after the removal of the exudate is rarely seen. It is remarkable how little involvement of the lung tissue itself occurs in pneumonia. The entire process seems to take place in the alveolar space and involves only the superficial epithelium of the air spaces, so that the complete restoration of the lung is readily brought about after the inflammation subsides. Organization or rarefaction of the exudate may take place in a few cases. In this condition, the exudate, instead of undergoing resolution by absorption, is invaded by blood cells and fibroblasts with a resulting fibrosis of the lung. The cells of the alveolar walls proliferate, non-connective tissue is found in the exudate, and a new fibrous tissue replaces the inflammatory tissue. The lung is now firm, elastic, reddish in color, and often covered with fibrinous adhesions. When the exudate is thus replaced, the lung is essentially functionless and the condition is described as an organizing pneumonia, chronic interstitial pneumonia, pulmonary fibrosis, or delayed resolution.

Abscess formation is rare, but occasionally we have a large sub-pleural abscess which ruptures into the pleural cavity and causes a pyopneumothorax. Gangrene is also a rare accident of resolution and it results from a necrosis of the lung, usually due to a secondary infection with putrefactive bacteria.

In addition, we may find the following pathology in other internal organs: dilatation of the right side of the heart, and cloudy swelling of other internal organs. In about one-half the cases of pneumonia, the spleen is appreciably enlarged.

Bibliography.

Austrian, Charles R.: Acute Lobar Pneumonia, Tice's Practice of Medicine.

Davis, Gwilyn G.: Applied Anatomy.

Spitzka, Edward Anthony: Gray's Anatomy.

Mallory, Frank B: The Principles of Pathologic Histology.

Christian, W. G.: Descriptive Anatomy.

Reese, Albert M.: An Introduction to Vertebrate Embryology.

WHY WE CONSIDER INFANTILE PARALYSIS A FILTH-BORNE DISEASE.

By ENNION G. WILLIAMS, M. D., Richmond, Va.
State Health Commissioner.

In the literature issued by the State Department of Health, poliomyelitis is classified with the filth-borne diseases, such as typhoid, diarrhoea and dysentery. Several doctors have written us asking why we have classified the disease this way rather than with diphtheria, or measles and other diseases carried by the secretions of the mouth and nose, as most of the present text books do?

Our reasons for considering polio as carried chiefly through human filth are as follows:

1. No specific germ has been found. Its cause is believed to be a filterable virus. Experiments on monkeys show this virus to be both in secretions of the mouth and nose and in the bowel discharges. The disease has been transmitted to monkeys through both.

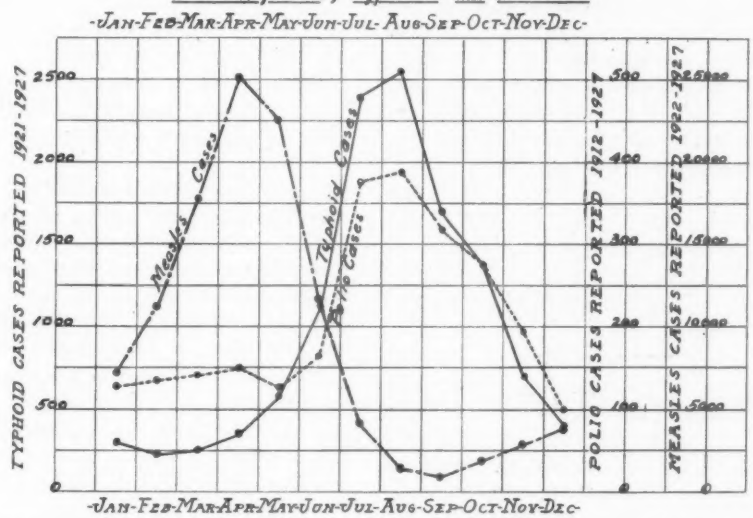
2. Its season of distribution is similar to the diseases carried by flies and filth. The curves for typhoid and polio in Virginia for the last fifteen years are amost identical. The curve for diseases carried by secretions in the mouth and nose are the reverse of filth-borne diseases.

3. Polio in our State is chiefly confined to sections where sanitation is bad. This was strikingly illustrated in the outbreaks in Virginia several years ago.

We do not say that infantile paralysis may not also be carried by secretions of the mouth and nose. The germs of typhoid fever can in the early stage of the disease also be found in these secretions. When we say that typhoid and polio are carried by the bowel discharges, we mean that through excreta is the most usual way for transmitting the germs or virus.

One might ask why there should be an epidemic of polio in New York City, which is so well sewered and has such a good water supply. I recall very distinctly Dr. J. N. McCormack, of Kentucky, who visited New York City at that time, telling me that he had never seen so many flies as were swarming in the neighborhood where the polio cases occurred. Even if flies had not been present, a good sewer system and good water supply may not have prevented the germs from filth being carried in some other manner, just as we have typhoid outbreaks in communities with a good water supply and sewer system.

It is interesting to note the usual sharp decline in the polio cases with the advent of cool weather. This happens with the other filth-borne diseases that are usually carried by flies, but the diseases carried by the secretions of the mouth and nose usually begin to rise with the advent of cool weather. We cannot eliminate the possibility of a specific insect being a factor in the spread of this disease, as the seasonal distribution is similar to that of the in-



sect-borne diseases as well as the filth-borne diseases. However, the increased prevalence in communities that are poorly sanitated and the frequent absence from spread in a well-sanitated community would indicate that insanitation cannot be ignored as a factor.

The evidence that polio is carried chiefly through the bowel discharges seems so great that we strongly recommend that the bedside precautions of a case should be similar to those of typhoid fever; that the excreta should be promptly and safely disinfected; that every effort should be made to exclude flies from the patient and from the home; and that the community for some distance about this home should make efforts to get rid of flies. The whole community should be sanitated or, in other words, all bowel discharges should be so disposed of as not to be accessible to flies and not endanger a source of drinking water. These additional precautions should be taken because we believe that there are many carriers of polio and many unrecognized cases that have symptoms with only a fever or perhaps slight intestinal disturbance, but no paralysis. In view of these possible carriers, the whole community should strictly observe the principles of sanitation mentioned above.

The accompanying chart shows the seasonal distribution of infantile paralysis, typhoid fever and measles, for a number of years past.

Analyses, Selections, Etc.

Renal Tumors: A Clinico-Pathological Study.

Wm. C. Quinby, on reviewing the end results of cases of renal tumor treated in the Urological Service of the Peter Bent Brigham Hospital, Boston, found an unexplained difference in the duration of life after operation, or in the date at which metastases became evident. Excluding all those instances where the growth was found to have already taken on invasive character, as well as those in which lymph nodes about the renal pedicle and aorta were found the seat of secondary deposit, there still lacked evidence on which to base an opinion as to the clinical prognosis. In other words, in not a few instances, apparently favorable for cure, metastases and death have taken place at a relatively short period after operation—and this in cases which had been carefully studied by X-ray of lungs and bones for metastases before operation, and in which the localized character of the tumor as seen at operation gave every hope of cure, or at least long freedom from metastases.

It was, therefore, hoped that a renewed study of the pathological appearance of the tumor as seen by the microscope, correlating this appearance with the clinical result, might serve to give added evidence as concerns prognosis.

Of the group of forty-three cases on record at the time this investigation was undertaken, there were thirty-five in which intensive pathological study was possible.

These cases are divided as follows:

I.	Primary adrenal carcinoma	3
II.	Adenocarcinoma of kidney	1
III.	Carcinoma of renal pelvis	2
IV.	Carcinoma of renal pelvis (associated with another type of tumor in the same kidney)	2
V.	Adenoma of kidney	2
VI.	Papillary adenocarcinoma of renal pelvis (malignant papilloma)	1
VII.	Renal tumor of hypernephroma type	24

Clinical Results

Dr. Quinby states that in thirty-one instances a nephrectomy has been performed with the result that thirteen patients are still living; sixteen are dead; and of two they have no information. Nine patients were alive and without recurrence at the time of this report, at the following intervals after operation:

10 years	1
8 years	1
6 years	2
5 years	1
4 years	1
3 years	1
1 year	1
4 months	1

Four other patients are alive, but have recurrences. It is of interest to note that in two of these recurrence was very late—in one nine years; in the other seven years after operation—and in each instance it took place in the region of the scar of operation.

General Description of the Forty-three Cases

Thirty of the patients were men, thirteen were women. The presenting symptom was pain in twenty-nine cases, tumor in twenty-five cases, and hematuria in twenty-eight cases.

Examined microscopically, the urine showed red blood cells in thirty-nine instances. In thirty of the patients there was slight fever; a finding also frequent in deep-seated malignancy of other organs and areas than the kidney. Sixty-two per cent of the patients were of the age group of from fifty to sixty-nine years inclusive and 88 per cent fell in the group of those forty years old and over. Only twelve of this whole group of patients appeared for investigation within three months after the appearance of symptoms, and in this regard the delay in reaching a proper diagnosis—not always the fault of the patient—is deplorable. One of our patients had bled intermittently for sixteen years, and five had had symptoms for from five to fifteen years.

In three instances renal calculus was associated with the renal tumor.

CONCLUSIONS

1. There is no adequate pathological criterion on which to base a prognosis as regards the duration of life after nephrectomy for renal neoplasm.

2. The size of a renal tumor is not a reliable indication of its character in respect to its degree of malignancy. Occasionally an entirely benign adenoma may reach large size.

3. Primary ligation of the vascular pedicle by transperitoneal approach is the most logical method of operative attack on such growths. (*Amer. Jour. Urology*, March, 1928).

L. T. P.

Serum Sensitiveness.

W. H. Park, M. D., Director, Department of Health Laboratories, New York, in a paper on "Deleterious Effects from Serum Injections", says: "I have had the opportunity of making a comparison in more than 100 individuals who had received toxin-antitoxin and in more than 100 individuals who have not received toxin-antitoxin. In my experience there was no appreciable difference in the reactions following serum injections in those who had toxin-antitoxin and in those who had not. If isolated cases in which marked reactions occur which happen in those who had toxin-antitoxin previously are reported, it is misleading because similar cases could be reported in those which have not received such injections. It is only by comparing the two lots that accurate information can be obtained.

"There was recently reported to me the case of a young girl who nearly died after a dose of scarlet fever antitoxin. She had not had toxin-antitoxin or any previous serum injection. If she had had, it would have been considered as the predisposing cause.

"From my own observations I am not at all worried by the slight degree of skin sensitization which may be produced by toxin-antitoxin."—(*Amer. Jour. of Public Health*).

Activities of the Rockefeller Foundation.

The first instalment of the review of the activities of the Rockefeller Foundation in 1927, written by its president, George E. Vincent, summarizes its work in brief:

During 1927 the Rockefeller Foundation, in disbursing from income and capital $11,223,124, (1) aided local health organizations in eighty-five counties of six states in the Mississippi flood area; (2) operated an emergency field training station for health workers in this region besides contributing toward the support of nine other training centers elsewhere; (3) assisted nine schools or institutes of public health and three departments of hygiene in university medical schools; (4) gave aid to seventeen nurse training schools in nine countries; (5) furnished funds for land, buildings, operation, or endowment to nineteen medical schools in fourteen countries: (6) supported the Peking Union Medical College; (7) paid two million dollars toward a new site for the University of London; (8) helped Brazil to maintain precautionary measures against yellow fever; (9) continued studies of that disease in West Africa on the Gold Coast and in Nigeria; (10) had a part in malaria control demonstrations or surveys in eight states of the Southern United States and in eleven foreign countries; (11) aided nineteen governments to bring hookworm disease under control; (12) contributed to the health budgets of 268 counties in twenty-three states of the American Commonwealth and of thirty-one similar governmental divisions in fourteen foreign countries; (13) helped to set up or maintain public health laboratory services or divisions of vital statistics, sanitary engineering, or epidemiology in the national health services of nineteen countries abroad and in the state health departments of sixteen American states; (14) made grants for mental hygiene work in the United States and Canada; (15) provided funds for biological research at

the Johns Hopkins University and aided investigations in this field at Yale University, the State University of Iowa, the University of Hawaii, the Bernice P. Bishop Museum in Honolulu, and certain universities of Australia; (16) helped the League of Nations to conduct study tours or interchanges for 125 health officers from forty-four countries, to supply world-wide information about communicable diseases, to train government officials in vital statistics, and to establish a library of health documents; (17) provided, directly or indirectly, fellowships for 864 men and women from fifty-two different countries, and paid the traveling expenses of 115 officials or professors making study visits either individually or in commissions; (18) made minor appropriations for improving the teaching of the premedical sciences in China and Siam, for the operating expenses of hospitals in China, and for laboratory supplies, equipment, and literature for European medical centers which have not yet recovered from the after-effects of the war; (19) lent staff members as consultants and gave small sums for various purposes to many governments and institutions; (20) made surveys of health conditions and of medical and nursing education in fourteen countries.

Roentgenology

At the Annual Meeting of the Roentgen-Ray Club of Virginia held in Petersburg in 1927, the advisability of a series of articles dealing with Roentgenology was discussed. It was brought out during the discussion, that many of the practicing physicians graduated before 1895, the year of the discovery of the Roentgen-Ray. Many others graduating one or two decades later had little or no instruction in this specialty. In addition to this, the uses of this method of diagnosis and therapy have increased tremendously, and each year finds some great advancement. Consequently, the busy practitioner, who has time for reading only the articles directly pertaining to his practice, skips over the articles dealing with Roentgenology, and does not realize the aid which he may receive from the newer methods of diagnosis and treatment. On the other hand, many excellent practitioners believe the Roentgenologist capable of visualizing any tissue in the body, such as nerves, muscles, ganglia, etc.

In view of the above discussion, a committee with Dr. V. W. Archer, University of Virginia as Chairman, was appointed to write a series of articles dealing with the generally accepted uses and limitations of the Roentgen-Ray as a method of diagnosis. This series was to be written for the benefit of the general practitioner, and was to be non-technical. While the committee was working on this, two articles by Dr. Leopold Jaches, Radiologist of the Mt. Sinai Hospital, New York City, appeared in the *Journal of the American Medical Association*, under the auspices, and with the approval of the Council on Physical Therapy. These articles seemed to cover the ground outlined by the Roentgen-Ray Club of Virginia, and with the permission of the author and of the *Journal of the A. M. A.*, these articles will be published in the VIRGINIA MEDICAL MONTHLY.

Roentgen-Ray Diagnosis.

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

These pages present a sketchy outline of the aid which can be rendered by the roentgen rays in the recognition of disease. The space allotted being limited, only the most salient features of roentgen-ray diagnosis can be touched on. Many of the rarer but nevertheless important conditions, and even some of the more frequent ones had to be omitted. An attempt, however, has been made to present the subject with sufficient completeness to enable the physician who is not thoroughly familiar with the possibilities of roentgen-ray diagnosis to obtain a fair index of the diseases in which the roentgen rays can be of aid to him.

RELATIVE VALUE OF ROENTGENOGRAPHY AND FLUOROSCOPY

This is not the place to discuss technic. The subject cannot be explained theoretically. Only practical instruction and demonstration can give one an idea of the methods to obtain desired results. It is appropriate, however, to discuss the relative value of fluoroscopy and roentgenography. As a general principle it may be stated that whenever organs in motion are to be studied, fluoroscopy is the method of choice. No roentgenograms, however large their number, can give the impression of the movements of the diaphragm, of the action of the heart, of the pulsation of the aorta, or

of the peristaltic activity of the stomach and intestines. In the latter organs even fluoroscopy, unassisted by the observer's palpatory manipulations, is generally insufficient. On the other hand, no recital or sketch of the fluoroscopic observations can equal the roentgenogram as a permanent record, nor can it furnish the fine detail often indispensable for a diagnosis. The best results are obtained by a combination of fluoroscopy and roentgenography when chest and gastro-intestinal tract are to be examined. Roentgenographic examinations are best when parts at rest are under consideration, such as bones, urinary concretions, and the nasal accessory sinuses. Fluoroscopy alone may be used in the study of cardiovascular lesions, large mediastinal tumors, or fluid in the chest. It is unsafe, however, to rely absolutely on negative fluoroscopic observations. The fine lesions of early pulmonary tuberculosis, for instance, are invariably overlooked, because either the fluoroscopic screen cannot register them with the detail that the photographic emulsion does, or human eyes are not sufficiently sensitive to detect any but the coarser shadows. It would be well for the internist or the surgeon who, following the present-day trend, installs a fluoroscopic outfit in his office, to bear in mind this limitation. Such warnings are especially appropriate at present when our younger men who spend a short time in the continental European roentgen-ray institutes bring back the idea that fluoroscopy is all that is necessary. At several of these institutions the chiefs or their assistants admitted that they were compelled to resort to fluoroscopy because it is cheaper. In estimating the relative value of these two methods one should also bear in mind that the greatest advances in roentgen-ray diagnosis made during the last twelve or fifteen years were accomplished in this country, where the fluoroscope, though unsparingly used, is generally subservient to the rentgenogram. This statement is not prompted by super-patriotism. Most American roentgenologists concede the superlative quality of European roentgenology. Many American radiologists received all or a great part of their early training in Europe and learned that even there the roentgenogram was preferred by those who had the necessary funds available. Such, for instance, was the method of Albers-Schönberg, the great pioneer roentgenologist. Though he used the fluoroscope constantly and eventually lost his life as a result, he made roentgenograms of everything.

Stereoscopy and the single roentgenogram each has its particular field. Two plain views at right angles to each other are more valuable than a stereoscopic set made in only one direction. Stereoscopic views at right angles to each other are, of course, better than plain views in two directions. In the skull, pelvis, shoulders and hips, where views at right angles to each other cannot be taken, the stereoroentgenogram will give the best results.—(*J. A. M. A.*, February 18, 1928).

(*To be continued*).

Bibliotheca Obstetrica

William Douglas.

Douglas (William). A letter to Dr. Smellie, showing the impropriety of his new invented wooden forceps; as also the absurdity of his method of teaching and practicing midwifery. 1 p. l., 25 pp. 8°. *London, J. Roberts*, 1748.

————. A second letter to Dr. Smellie, and an answer to his pupil confirming the impropriety of his wooden forceps; as also the absurdity of his method of teaching and practicing midwifery. 32 pp. 8°. *London, S. Paterson*, [1748?].

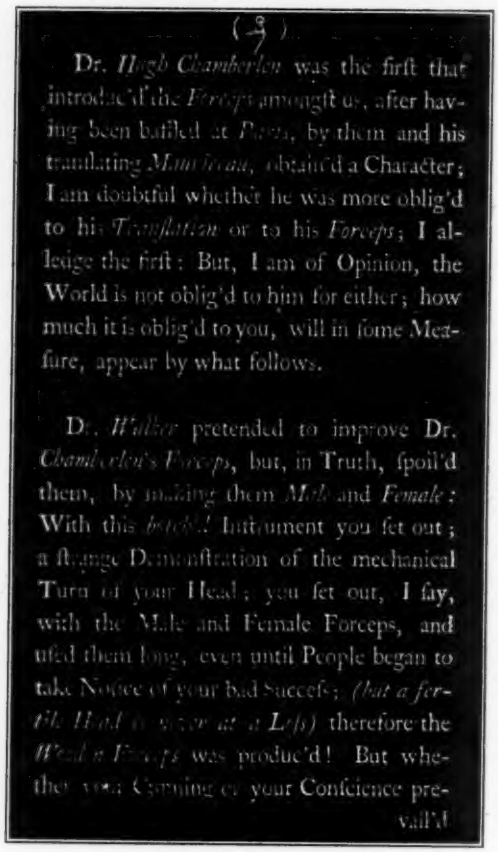
William Douglas is known only as a detractor of William Smellie. Of the well known carpers of the "Master of British Midwifery", John Burton, Frank Nicholls, William Douglas and Mrs. Nihell, Douglas was the chief. He finds fault with Smellie's innovation, the manikin, and with the use of forceps. It is, however, about the wooden forceps that he centers his vulgar abuse. He says that no less than eight women have died in a few months under the Hands of a *Wooden Operator*. "Such *monstrous Hands* are, like *wooden Forceps*, fit only to hold Horses by the Nose, whilst they are shod by the *Farrier*, or stretch Boots in *Cranburne Alley*." In another place he says "but this I can say for your Hand, that it has the Advantage of making Matters exceeding easy for the Husband."

It is strange that such coarseness should have been noticed by Smellie, but about the the time of Douglas' second letter Smellie published a twenty-seven page letter in reply. In this letter he explains that one of the advantages of the wooden forceps is that no noise is made when the blades are locked and there-

XUM

fore the patient is not as much alarmed as with the iron instruments. Smellie used the wooden forceps only a few times. I have not been able to find a picture of them. They would have passed into innocuous desuetude, had not Douglas turned them to his own purpose in ridiculing Smellie's personal appearance.

Nothing is known about William Douglas himself. Dr. Herbert Spencer says he was no



(9)

Dr. *Hugh Chamberlen* was the firſt that introduc'd the *Forceps* amongſt us, after having been baffled at *Paris*, by them and his tranſlating *Mauriceau*, obtain'd a Character; I am doubtful whether he was more oblig'd to his *Tranſlation* or to his *Forceps*; I alledge the firſt: But, I am of Opinion, the World is not oblig'd to him for either; how much it is oblig'd to you, will in ſome Meaſure, appear by what follows.

Dr. *Walker* pretended to improve Dr. *Chamberlen's Forceps*, but, in Truth, ſpoil'd them, by making them *Male* and *Female*: With this *botch'd* Inſtrument you ſet out; a ſtrange Demonſtration of the mechanical Turn of your Head; you ſet out, I ſay, with the Male and Female Forceps, and uſed them long, even until People began to take Notice of your bad Succeſs; *(but a fertile Head is never at a Loſs)* therefore the *Weak a Forceps* was produc'd! But whether your Cunning or your Conſcience prevail'd

A page from the letter to Dr. Smellie.

relation to the brothers John and James who lived at the same time. James Douglas was a celebrated anatomist and is remembered as the discoverer of the pouch of periotoneum that bears his name. John Douglas was surgeon and devised a suprapubic operation in lithotomy. He had a more controversial disposition than his brother James, and became involved in disputes with W. Cheselden and with Chapman.

M. P. R.

Proceedings of Societies

Scott County Medical Society Organized.

The doctors of Scott County, Virginia, met at Gate City, Va., about the middle of April and organized a County Medical Society and applied for charter from the Medical Society of Virginia. Dr. N. W. Stallard, Dungannon, was elected president, Dr. J. M. Daugherty, Sr., Nickelsville, vice-president, and Dr. E. M. Corns, Gate City, secretary-treasurer. There are twelve charter members as follows: Drs. N. W. Stallard and O. E. Bevins, Dungannon; Drs. V. W. Quillen and J. M. Daugherty, Sr., Nickelsville; Drs. C. R. Fugate and S. B. Nickels, Clinchport; Drs. E. M. Corns, J. M. Daugherty, Jr., A. McG. Wallace and C. T. Barker, Gate City; Dr. H. K. McConnell, Mack; and Dr. R. W. McConnell, Fort Blackmore.

The Amelia County Medical Society

Met at Amelia C. H., Va., on April 23, 1928, and elected the following officers for the ensuing year: President, Dr. H. Cowles Rucker, Mattoax; vice-president, Dr. J. M. Habel, Jetersville; and secretary-treasurer, Dr. J. M. Hamner (re-elected), Mannboro.

Albemarle County Medical Society.

At a recent meeting of the Albemarle County Medical Society, the following resolution was adopted and sent this office to be placed on record:

We, the Albemarle County Medical Society, heartily endorse the campaign for the early diagnosis of tuberculosis, as sponsored by the National Tuberculosis Association during the months of March and April, 1928.

We shall gladly cooperate with the Virginia Tuberculosis Association in the furtherance of this work in this County and in the State.

(Signed) F. C. McCue, *Sec'y.*

Clinch Valley Medical Society.

On April 26th, the Clinch Valley Medical Society met at Tazewell, Va. About sixty doctors from southwest Virginia and West Virginia were in attendance. This included nearly eighty per cent of the membership.

The morning session was opened by an address of welcome by Mayor J. B. Boyer, of Tazewell. Dr. W. R. Culbertson, of Norton, Va. responded.

The scientific part of the programme was called to order by Dr. C. B. Bowyer, of

Stonega, Va., President of the Society. Dr. J. C. Sutherland, of Clintwood, was at the secretary's desk. Vice-presidents are Dr. J. M. Daugherty, Nickelsville; Dr. P. D. Pence, St. Charles; and Dr. T. T. McNeer, Dante. Dr. Isaac Peirce, Tazewell, was chairman of the local committee of arrangements.

Dr. J. S. Chalmers, of Appalachia, Va., read a paper entitled "Intravenous Sodium Iodide in the Treatment of Gonorrheal Epididimitis." This was followed by a paper upon "Heart Pain" by Dr. F. H. Smith, of Abingdon, Va. "Surgical Limitations Within the Abdomen" by Dr. Wade H. St. Clair, of Bluefield, W. Va., concluded the programme of the morning session. The members then took lunch at the Tazewell Hotel.

The regular order of the afternoon session was changed so that the pupils of the High School might have the opportunity of hearing a talk by the Health Commissioner of Virginia, Dr. Ennion G. Williams. He gave a very interesting talk upon the work of the State Health Department, stressing the part of the work that more closely touched school children. Many prominent laymen of Tazewell and the senior class of the High School filled the auditorium to hear Dr. Williams, so that standing room was at a premium.

After this, Dr. Greer Baughman, of Richmond, read a paper upon "Prenatal Care in Town and Country." He urged the closer contact between pregant women and the doctors. He further suggested the establishment of dispensaries in local hospitals for handling indigent cases. Dr. Garnett Nelson, of Richmond, followed with a paper on "Cardiovascular and Renal Complications of Pregnancy."

The society then adjourned to another building where Dr. John S. Horsley, Jr., of Richmond, demonstrated with lantern slides the result of plastic surgery, followed by a lantern slide demonstration of bronchoscopic cases by Dr. Harry H. Haggart, of Bluefield, W. Va.

Following the scientific session a very delightful banquet was served in the Sunday School room of the Methodist church.

Dr. C. B. Bowyer was the recipient of congratulations because of the success of the meeting both from a social as well as a scientific standpoint. He was the prime mover in the organization of the Society, which embraces the counties of Buchanan, Dickenson, Lee Russell, Scott, Tazewell and Wise, and much credit is due him for the excellent meetings which have been held.

The next meeting will be held at Appalachia, Va.

Danville Academy of Medicine.

Drs. L. O. Crumpler and J. T. Daves, both of Danville, Va., read papers at the meeting of the Academy held on May the 8th. Dr. Greer Baughman, Richmond, who has charge of the pre-natal clinics being conducted by the State Board of Health, also gave an address. In lieu of the April meeting a large number of the Danville doctors rode to South Boston to attend the Spring meeting of the South Piedmont Medical Society on April the 17th.

The South Piedmont Medical Society

Held its regular semi-annual meeting in South Boston, Va., April 17, under the presidency of Dr. Sam Wilson, of Lynchburg. In addition to the papers on the subject for general discussion on "Pernicious and Splenic Anemia", a number of other papers were presented by members and invited guests. Between the afternoon and evening sessions, supper was served.

During the business meeting, Dr. William R. Martin, Charlotte C. H., was elected president for the ensuing year; Dr. C. D. Bennett, of Chatham, vice-president, and Dr. George A. Stover, of South Boston, was re-elected secretary-treasurer.

University of Virgina Medical Society.

The sixth meeting of the University of Virginia Medical Society was held on March 19th at the University of Virginia Hospital.

Dr. John H. Neff reported a case of congenital hypertrophy of the verumontanum in a two year old child. Original studies had shown 130 c.c. of residual urine, tremendous dilatation of both ureters, streptococcus infection, 10 per cent two-hour phthalein output. Much improvement followed continuous catheter drainage and two fulgurations of verumontanum. A later cystostomy had been used for drainage for twelve months. The two-hour phthalein output was recently 55 per cent. An especially constructed urethroscope for future attack upon the verumontanum was demonstrated. He believed the condition to be quite rare. Bugbee, in 1923 and 1924 in reporting one clinical case, and ten instances among 4,903 autopsies at the Babies' Hospital, stated the anomaly had not been previously recorded.

Dr. L. T. Royster presented two cases of

XUM

vaso-motor disturbance in children in whom the diagnosis had not as yet been made. He discussed the possibilities of acrodynia, erythromelalgia and allied conditions. He gave a brief summary of the recent literature on the subject.

A brief review of the literature to date concerning the Minot-Murphy liver diet was made by Dr. S. D. Blackford and six cases treated in the University Hospital were summarized. Each of the six cases illustrated some particular virtue of the liver diet in the treatment of pernicious anemia. Drs. Smith, Kindred, Speidel, and Wood entered the discussion.

The final paper of the evening was "Foreign Bodies in the Esophagus and Air Passages" by Dr. F. D. Woodward. Dr. Woodward reviewed much of Chevalier Jackson's work on this subject and then showed lantern slides of a dozen or more cases in which he had successfully removed foreign bodies in the last three years. Dr. L. T. Royster discussed this paper and gave a resumé of the diagnostic signs of foreign body in the lungs in children.

The seventh meeting of the University of Virginia Medical Society was held on April 2d at the University of Virginia Hospital.

Dr. Richard Meade gave a review of the subject of "Massive Collapse of the Lungs," with report of a case now under treatment. Dr. E. N. McPeak demonstrated X-ray films from the patient.

The remainder of the evening was devoted to a consideration by Dr. L. T. Royster, of "Various Aspects of Malnutrition in Children," illustrated with many lantern slides.

The eighth meeting of the University of Virginia Medical Society was held on April 16th at the University of Virginia Hospital, Dr. Bray presiding.

Dr. F. H. Fechtig exhibited a case of Friedreich's ataxia in a child from the Pediatric Service. Family history not conclusive. Discussion by Dr. W. W. Waddell.

Dr. Allen Voshell exhibited a boy from his service with muscular dystrophy, and discussed the evidence for a final diagnosis.

A case report was given by Dr. Oscar Swineford of trichiniasis of local origin.

Dr. Bruce Morton reported a case of cholecystitis with operation, pictures and specimens in which the ascaris was found as the cause. In this connection he gave a review of the literature.

The guest of the evening was Dr. C. W. Beauchamp, of Charlottesville, who described focal infections in teeth, reviewing his own experience and exhibiting a series of X-ray lantern slides and entering into the relationships between the tooth infections and other maladies. Dr. Fletcher Woodward discussed this paper, with special reference to the eye conditions attributable to focalized infection at the roots of teeth and the sinuses.

Woman's Auxiliary, Medical Society of Virginia

DOCTOR: PLEASE CALL ATTENTION OF YOUR WIFE TO THIS DEPARTMENT.

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary and Treasurer, Cottage Toll Road, R. F. D., Norfolk, Va.

The Child's Bill of Rights.

The Woman's Auxiliary to the American Medical Association has pledged its service to the American Child Health Association, and every member is asked to give the Child Health Program all the endorsement and publicity possible.

The Auxiliary is pushing the birth registration for the entire nation, and has adopted the prenatal and preschool age child as its principal work in Child Health.

On May 1, 1928, America's Child Health Day celebrated its fifth birthday.

The Woman's Auxiliary is one of the thirty-nine national organizations which form the spokes in the big May Day wheel.

Make the child's bill of rights a working platform in every community.

Better children for our Nation; a better nation for our children.

The Child's Bill of Rights

The ideal to which we should strive is that there shall be no child in America:

That has not not been born under proper conditions;

That does not live in hygienic surroundings;

That ever suffers from undernourishment;

That does not have prompt and efficient medical attention and inspecion;

That does not receive primary instruction in the elements of hygiene and good health;

That has not the complete birthright of a sound mind in a sound body;

That has not the encouragement to express in fullest measure the spirit within which is the final endowment of every human being.

HERBERT HOOVER.

To make the vision of this "Bill of Rights" a working program in an increasing number of communities is

THE PURPOSE OF MAY DAY—NATIONAL CHILD HEALTH DAY

The Child's Bill of Rights is a complete guide to every needed activity to round out the life of the child. Let people everywhere help to incorporate these definite aims into the lives of children:

1. Preparedness for parenthood: motherhood, fatherhood, pre-natal care.
2. A wholesome home environment: physical, cultural.
3. Sound nutrition.
4. Physical examination, correction of defects, protection against disease.
5. Training in health habits and knowledge: in the home, in the school.
6. Mental and emotional soundness: through inheritance, through environment.
7. Spiritual encouragement: through the home, through the church.

THE WORLD THE CHILD LIVES IN

By AIDA DE ACOSTA BRECKINRIDGE.

(From the American Child Health News).

All sorts of things contribute to make the child's world a happy place for sound development of body, mind and spirit. But perhaps none is more important than a clean and safe milk supply. Children must have milk, but it needs to be safe milk. Otherwise we shall have epidemics of sickness instead of progress toward our goal of healthy, happy, splendid children.

Much has been done in the last few years to ensure clean and safe milk to our American people. Not only have great, model dairies come into existence but in many states and many communities ordinances have been passed and enforced for the protection of the milk supply. The day is passing when a farmer does not wash his hands before he milks his cows. Moreover he washes his cows and provides a clean stable. He sterilizes milk-pails; he protects the milk from dirt and germs after he has milked it. His conscience has been aroused, because he has learned the difference between dirty milk and clean, safe milk. He does not want to feed dirty milk to his own children or sell it to his neighbors.

We have reason, then, to rejoice; but, according to the report of the Survey of Small Town Milk Supplies, recently published by the American Child Health Association, we have still a long way to travel before America's milk supply will be one hundred per cent clean and safe. Out of one hundred and seventeen towns with a population of less than twenty-five thousand, ninety-seven do not pasteurize their milk. In only two of the towns or cities was most of the milk found to be clean. In the rest it was really dirty, the kind of dirty that left a deposit when it was poured through a filter of cotton. In nineteen cities half the milk proved to be clean or "fairly clean." In one hundred and nine towns and cities the milk was not kept on ice while it was being delivered. In seventy-one cities half of the milk registered 55° F. at the time of delivery. Germs, or bacteria to speak more scientifically, thrive in milk at that temperature or above, and accordingly threaten the health of the people who use it.

We are working not only to make *better children for our nation* but also to make *a better nation for our children.* Let us step on the accelerator and include a clean and safe milk supply in the goal toward which we are working for May Day 1928.

The Woman's Auxiliary has its Committees on "Pure Milk" and has been doing splendid work.

ALICE LEIGH.
(*Mrs. Southgate Leigh*).

The Woman's Auxiliary to the Post-Graduate Medical Society of Southern Virginia

Held a luncheon meeting on April the 17th, in Petersburg, the president, Mrs. E. J. Nixon, of that city, presiding. It was a pleasure to the Auxiliary to have with them Mrs. Francis W. Upshur, of Richmond, State president-elect, who told of the work being done by the Auxiliary to the Richmond Academy of Medicine, with the hope that it might suggest ideas for work by other auxiliaries. She suggested

XUM

that the Post-Graduate Auxiliary might join with the Auxiliary of the Richmond Academy of Medicine in some pilgrimage, as a means to raising money. The president appointed a committee to confer with a similar committee from the Richmond organization.

Mrs. Nixon stated that the Auxiliary was desirous of doing something worth while for the Petersburg Hospital, and read a list of articles needed by the hospital, this having been prepared upon request, by Miss Isabelle Simpson, superintendent of the hospital. Mrs. Nixon suggested that the Auxiliary should in a similar manner help the Hopewell Hospital—the only other hospital in its territory.

Following this, the business meeting was held and reports were received from the officers and chairmen of various committees. The Legislative Committe, Mrs. J. Bolling Jones, chairman, reported especial activity, due to the fact that they had assisted in medical matters before the General Assembly of Virginia.

The Auxiliary selected June the 1st as the date for entertaining the graduating class of the Petersburg Hospital.

It was decided that the next meeting of the Auxiliary, to be held in July, should be a picnic meeting.

The Woman's Auxiliary of the Norfolk County Medical Society

Held an executive meeting on April the 19th, with an excellent attendance. Several matters of importance were discussed. The Constitution and By-Laws were read and a committee was appointed to revise same and present their report to the meeting of the Auxiliary in June.

Immediately following this session, there was a meeting of the Auxiliary at which time reports from standing committees were given. It was stated that in April, the ladies had bought and presented the doctors with two very comfortable chairs for their new library in the Medical Arts Building.

The feature of this meeting was the talk by Miss Blanche Webb, director of the staff of nurses of the Children's Clinic of the Norfolk City Union of the King's Daughters, who told of the splendid work being done by that organization.

The Auxiliary will hold its next meeting in June.

The Truth About Medicine

In addition to the articles enumerated in our letter of February 25th, the following have been accepted:

Adohr Creamery Co.
B. Acidophilus Milk—Adohr.
Parke, Davis & Co.
Solution Ephedrine Sulphate—P. D. & Co., 3 per cent.

PROPAGANDA FOR REFORM.

Poliomyelitis Antistreptococcus Serum.—In cases of epidemic poliomyelitis that come under treatment after the paralysis is well established, the best that can be done is to give as good general medical and nursing care as possible. Cases have been described in which convalescent serum—serum from patients who have recovered from the acute symptoms of the disease—appears to have prevented the development of paralysis. The use of Rosenow's poliomyelitis antistreptococcus serum can be justified only as an experiment. The claims of Eli Lilly & Co. to the contrary notwithstanding, this serum so far has not been accepted as of such value as to warrant its general use. (Jour. A. M. A., December 10, 1927, p. 2061).

The Rectal Administration of Ether and Oil.—The Council on Pharmacy and Chemistry has authorized publication of a report prepared by R. A. Hatcher, on the Gwathmey Method of Anesthesia, concerning the rectal administration of ether and oil. Dr. Hatcher summarizes his report in part, thus: The admixture of ether with oil or liquid petrolatum constitutes an advance over other methods for the rectal or colonic administration of ether. Probably a mixture of equal volumes of ether and olive oil (or liquid petrolatum) is the most suitable for inducing anesthesia by rectal instillation after the subcutaneous injection of morphine. The method has certain advantages and also certain disadvantages. It shares with anesthesia by inhalation certain drawbacks. There is an urgent need of detailed statistical studies of accidents due to anesthesia conducted in various ways. The choice of an anesthetic and its mode of administration should be made with the same care with which one chooses other therapeutic agents in the treatment of disease, and the use of any method as a routine is irrational and dangerous. (Jour. A. M. A., December 17, 1927, p. 2114).

Progress in Obstetric Anesthesia and Analgesia.—For almost fifteen years, the method of Gwathmey, involving the rectal administration of ether and oil for anesthesia, has been before the profession. More recently the method has been combined with the subcutaneous injection of magnesium sulphate, particularly for use in obstetrics. Varying reports have appeared in medical literature as to the value of these procedures under such conditions as are encountered in the clinic, in the hospital and in private practice. It seemed desirable, therefore, for the Council on Pharmacy and Chemistry to prepare a statement of the present status of these methods. A survey of the literature indicates to Dr. Robert A. Hatcher that rectal or colonic oil-ether anesthesia has the advantage of sparing the respiratory passages, decreasing secretion in the respiratory tract, eliminating or alleviating the stage of excitement, lessening nausea and leaving clear the field for operations about the head and face. On the other hand, this manner of producing anesthesia is not under such perfect control as when anesthetics are given by the inhalation method. The chief use of

the synergistic method of Gwathmey has been in relieving the pains of delivery. The time is not ripe for such general and indiscriminate use of the method as will unfailingly be encouraged by commercial exploitation which has already been done. (Jour. A. M. A., December 17, 1927, p. 2118).

Oxygen by Injection.—Experiments to determine the value of administering oxygen intravenously, intraperitoneally and subcutaneously on dogs are reported. Theoretically the oxygen tension of arterial blood can be raised by intravenous injection of oxygen. Practically, however, the oxygen deficiency is accentuated when this point is reached. Results from subcutaneous injection were even less encouraging. There was, however, sufficient absorption from intraperitoneal injection of oxygen to justify clinical experiment with the method. It would be necessary to control the procedure by arterial puncture and blood-gas analysis. (Jour. A. M. A., December 17, 1927, p. 2120).

Pul-Bro-Tu, a Portland Fake Consumption Cure.—Newspapers and magazines all over the country are receiving a three-page typewritten communication on the stationery of the mayor's office at Portland. The letter is addressed to the council of the city of Portland, and it purports to be a final report relative to tuberculosis tests said to have been conducted by the board of health of Portland, in conjunction with other agencies and individuals, with a product put out by one George Kirkpatrick. While the tests were carried out on cows, the mayor states that "the medical fraternity should take immediate steps to apply the treatment through the medium of painstaking tests to the human family." Kirkpatrick is not a physician. He has been arrested at various times for violation of the Medical Practice Act. The preparation "Pul-Bro-Tu" has been on the market, it seems, for seventeen years, but it is only since Kirkpatrick received political backing that he has made any large noise in the field of quackery. The preparation was analyzed in the A. M. A. Chemical Laboratory in 1926, and was found to be a weak solution of potassium iodide and Fowler's solution. The nostrum has not the slightest value as a cure for tuberculosis; on the contrary, the danger of administering iodides to the tuberculous is well known. (Jour. A. M. A., December 17, 1927, p. 2121).

Youthray, Another Lead and Sulphur Hair Dye.—"Youthray," which, according to the label, "restores your youthful natural color to gray hair" and is "not a dye," is put on the market by the Ray Laboratories, Chicago. A booklet declares that "Youthray is entirely harmless" and is "unusually effective for ending dandruff" and for "promoting scalp and hair health." The A. M. A. Chemical Laboratory analyzed the preparation and reports that it belongs to the lead acetate and sulphur type of hair dye. While cosmetics do not come under the control of any federal law, the claims regarding dandruff and "hair health" and similar claims should bring the preparation within the jurisdiction of the federal authorities. (Jour. A. M. A., December 17, 1927, p. 2133).

Abramsism Abroad.—The fantastic hokum of Albert Abrams is practically a dead issue in the United States. It has been relegated in this country to obvious fakers, some osteopaths, and the occasional physician who suffers from an itching palm or a lack of scientific balance. The Abrams' fantastic hokum is now deluding the credulous in England, Canada and France. In Canada it has no support from the more responsible element of the medical profession. In France, the Abrams' nonsense seems to be mainly boosted by one Regnault. It is in England, however, that the E. R. A. has taken on its most amusing, or, should we say, its most tragic aspect. The chief exponent of the Abrams' cult in the British Isles is Sir James Barr, who was once president of the British Medical Association. Sir James seems to have swallowed Abrams' theories hook, line and sinker. (Jour. A. M. A., February 4, 1928, p. 401).

Sanarthrit and Telatuten Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Sanarthrit and Telatuten are products of Luitpold-Werk, Munich, Germany, distributed in the United States by East Brook, Inc., New York, claimed to be tissue preparations which owe their origin to Professor Ernst Heilner, of Munich. Sanarthrit is proposed for intravenous use as a "causal therapy of all forms of chronic arthritis." It is claimed to be "a specific substance of protein nature; the definite chemical composition is not yet cleared up"; it is "made from animal cartilaginous tissue and purified." The Council found Sanarthrit unacceptable for New and Nonofficial Remedies because the statement of its composition is vague and indefinite; because evidence is not offered to show that its composition is uniform; because it is marketed under a therapeutically suggestive, proprietary name and because the claims for its value are not supported by acceptable clinical evidence and are therefore unwarranted. According to the information furnished the Council by the Luitpold-Werk, Telatuten is stated to be "a specific substance of protein nature; the definite composition is not yet cleared up" and it is "made from the entire blood-vessel wall (intima, media, adventitia) of slaughtered animals, and purified." Telatuten is proposed as a "causal treatment of arteriosclerosis." The Council found Telatuten unacceptable for New and Nonofficial Remedies because its composition is indefinite and no evidence is offered to show that its uniformity is controlled; because it is marketed under a therapeutically suggestive, proprietary name; and because there is no acceptable evidence for its therapeutic value and efficacy, the claims made for its use being therefore unwarranted. (Jour. A. M. A., February 11, 1928, p. 463).

Asthma—Sera.—This is another iodide-containing asthma and hayfever nostrum. The statement "Asthma-Sera Ends Asthma and Hayfever Forever" appears on the stationery sent out by the R. M. B. Laboratories, Seattle, Washington. It does not appear on the trade packages which are subject to the control of the federal authorities which enforce the Federal Food and Drugs Act. Four bottles of Asthma-Sera "is considered a full treatment"; price, $10.50. However, the purchaser of four bottles is told that, if any symptoms of asthma remain when the first half of the fourth bottle is finished, he "should order two more bottles of Asthma-Sera *immediately*." The A. M. A. Chemical Laboratory analyzed Asthma-Sera and reports that it is essentially a solution containing 8.8 per cent strontium iodide, 0.43 per cent sodium iodide, and an emodin-bearing (laxative) drug. That iodides will be effective in certain forms of asthma is well known to every physician. Strontium iodide has no advantage over sodium or potassium iodide. (Jour. A. M. A., February 11, 1928, p. 480).

Joy Beans Quack Jailed.—Some time ago a fraud-order was issued against a quack, one Frank Beland, of Cairo, Ill. Beland exploited a piece of aphro-

disiac quackery under such trade names as "Joy Beans Laboratories" and "Beland Laboratories," selling a preparation that he called "Joy Beans." According to the government report "Joy Beans" were put up by Eli Lilly & Co. After trial, Beland received a jail sentence of ninety days. (Jour. A. M. A., February 11, 1928, p. 481).

Drugs Applied Through the Skin.—Certain drugs are absorbed by the skin, others not. Nonvolatile substances are not absorbed from aqueous solution. Such substances can be absorbed when applied to the skin in a fatty medium and with considerable friction. Bodies soluble in fat or fat solvents penetrate the skin more readily than water soluble substances. There is not great absorption, however, unless the substance is volatile. Volatile substances are much more readily absorbed through the skin and the degree of their absorbability is probably proportional to their volatility. (Jour. A. M. A., February 11, 1928, p. 481).

Prevention of Colds by Ultraviolet Radiation.—In 1926, Barenberg, Friedman and Green found that infants exposed to ultraviolet radiation improved in general health during the first month of treatment but contracted an increased number of colds during the second, third and fourth months. Accordingly, Maughan and Smiley attempted to administer a quantity of ultraviolet radiation equivalent to that to which the ordinary city dweller is exposed during the summer. They conclude that irradiation, resulted in a reduction in the frequency of colds. Barenberg and Lewis have completed further experiments in which over-radiation was guarded against. Their results were no better than before. On the one hand are well controlled experiments with negative results in which the dosage was large. On the other hand are imperfectly controlled experiments and success which the investigators attribute to low dosage. Positive statements, faith and investments may well await further evidence. (Jour. A. M. A., February 18, 1928, p. 547).

Refractoriness to Insulin.—There is a gradually increasing number of records of diabetic patients who seem to be resistant to the expected remedial action of insulin. In a recent case, a patient proved relatively refractory to insulin for some months, responded only to enormous doses, and slipped into coma or precoma as soon as these doses were reduced. Tests showed that the refractory condition was not due to an inhibitory substance—an anti-insulin—in the blood. The observers of this case are inclined to believe that the peculiar reactions shown by their patient can best be explained by assuming that the diabetes was not due exclusively to pancreatic insufficiency but to the lack of some substance other than insulin and equally necessary for the metabolism of carbohydrates. (Jour. A. M. A., February 18, 1928, p. 549)

More Misbranded Nostrums.—The following products have been the subject of prosecution by the Food, Drug and Insecticide Administration of the United States Department of Agriculture which enforces the Federal Food and Drugs Act: Depurativo Cacique (Francisco de Jesus) consisting essentially of mercuric chloride, potassium chloride, sodium sulphate, alcohol and water, with sarsaparilla flavoring. Protecto Spray (Salol Chemical Company) a solution in glycerine of carbolic acid, salicylic acid, boric acid and a trace of volatile oil. Reno's New Health Uterine Tonic (S. B. Leonardi and Company) containing extracts of vegetable material, including berberine, alcohol and water. Kentos (Kentos Laboratories, Inc.) consisting essentially of zinc sulphate, common salt and water, with traces of potassium chlorate and volatile oils. Vernas Lotion (Vernas Chemical Company) consisting essentially of zinc chloride (0.4 per cent), cassia oil, glycerine, alcohol and water, colored green. Sanagono (Liaju Company) a solution of alum, zinc sulphate and carbolic acid. White Diarrhea Remedy (Barnes Emulsion Company) a solution of iron (ferrous) sulphate in water. Sannette (Sannette Chemical Company) consisting essentialy of boric acid, alum and zinc salts, with a small amount of methyl salicylate, phenol and menthol. (Jour. A. M. A., February 18, 1928, p. 562).

Poliomyelitis Antistreptococcus Serum.—The Council on Pharmacy and Chemistry publishes a preliminary report on poliomyelitis antistreptococcus serum. The Council reports that the use of a specific antiserum in the treatment of poliomyelitis has been proposed; that a number of reports on the use of such a serum have been published; and that two commercial products, obtained by immunizing horses against strains of streptococcus from poliomyelitis patients, have been submitted to the Council. The Council reports that because of lack of adequate evidence, it had been decided not to accept any poliomyelitis anti-streptococcus serum until more positive evidence for its usefulness becomes available. (Jour. A. M. A., February 25, 1928, p. 617).

Book Announcements

The Ultra-Violet Rays. Their Action on Internal and Nervous Diseases and Use in Preventing Loss of Color and Falling of the Hair. By ARNOLD LORAND, M. D. (Vienna), Physician at the Carlsbad Springs, Czecho-Slovakia; Author of "Old Age Deferred," etc. Philadelphia. F. A. Davis Company, Publishers. 1928. Octavo of 258 pages. Cloth. Price $2.50.

The Healers. By B. LIBER, Author of "The Child and the Home," "As a Doctor Sees It," "Sexual Life"; Editor of Rational Living. Published by Rational Living, Post Office Station M, Box 2, New York City. 1928. Small Octavo of 455 pages. Price $3.00.

Studies in the Psychology of Sex. Volume VII. Eonism and Other Supplementary Studies. By HAVELOCK ELLIS. Philadelphia. F. A. Davis Company, Publishers. 1928. Octavo of 539 pages. Cloth. Price $5.00.

Chiropractic. The Great American Joke. By CHAS. W. WARNER, Jackson, Miss. Pamphlet of 15 pages. Paper. Price, single copies by mail postpaid, 20 cents. Ten or more copies by mail, post, paid, each 10 cents.

New Abbott—D. R. L.—Milliken Price List. Attractively designed and printed in attractive colors. 176 pages. May be obtained free by addressing the Abbott Laboratories, North Chicago, Ill.

Certified Milk. Proceedings of the American Association of Medical Milk Commissions, Inc.; Certified Milk Producers' Association of America, Inc.; California Medical Milk Commissions, and the Metropolitan Certified Milk Producers, Inc., with the Certified Milk Producers' Association of America, Inc.; Constitution and By-Laws of the American Association of Medical Milk Commissions, Inc.; Methods and Standards for the Production of Certified Milk. 8vo. of 322 pages. Cloth.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.

B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.

AGNES V. EDWARDS, Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

VOL. 55 MAY, 1928 No. 2

Editorial

Sudden Death by Heart Failure.

Little study is needed to prove the truth of the assertion that sudden death (unexpected and unlooked-for death) by immediate heart failure, is very common in the present-day death roll. Death from slow but persistent failure of the heart, characterized by days, months and even years, of more or less distressing heart symptoms, comes oftentimes, as a relief to the harassed patients. Under the skilful management of the physician, many of these cases of heart disease go from one attack of decompensation to another, from dropsical, edematous, dyspnoeic symptoms to states of comparative comfort. When finally, as remedies and protective measures no longer correct the faults of pathologic functions or eliminate the accumulation of incompetent circulation, the heart reserve is brought to a minimum and the organ can no longer carry on, death is indeed quite welcome. During such a period of harassing and gradual heart failure the compensations of mental adjustment are acquired and the sting of death is somewhat lost. But not so with death from heart disease that has existed undetected. While, to the patient, such a death is devoid of mental and physical distress, there are several cogent reasons why the frequency of such a death is ignominious and unworthy of the day in which we live—with its large knowledge of heart pathology and disease.

For instance, sudden death from heart disease may come by embolus. This may occur in the course of or following upon a siege of rheumatic endocarditis. This complication of certain types of endocarditis, with a long train of antecedent symptoms, is one that physicians must keep in mind. The precaution of forewarning attendants at the bedside and the family of such patient of the possibility of such a sudden ending of the case, is a wise one. The admonition of the possibility of such a calamity somewhat prepares friends and relatives and, at the same time, imbues them with the belief that the attendant understands the ways of the disease. To be a "wiseacre" at foretelling the probable death of patients is conceit that does not become the real doctor or physician, but to be on the alert and to tell those who have a right to know what is the usual or ordinary course of the disease under treatment, is the proper function and duty of the attendant physician.

Sudden death may likewise be met with in angina pectoris and coronary thrombus. In cases of hypertension-hearts, or in cases of syphilitic aortitis, one may always keep foremost in mind the treacherous uncertainty of prognosis; remembering that sudden and unexpected death may occur without warning or during an attack. The seriousness or severity of the attack of pain, unfortunately, may not be relied upon to serve as a guide in forming an opinion of the occurrence of death. The anginal syndrome may apparently be least frequent; the heart, under the test of usual physical examination, may appear to be functioning as well as ever and even better, and yet sudden death may occur. So in such cases one must feel a sense of apprehension even in the face of an improvement of symptoms, or an infrequency of pain syndrome. In angina pectoris, years may be added to heart-longevity under certain conditions of care and management. The experience of years has borne this out, and it is this factor of increasing length of years that the treatment of heart disease has to offer.

But sudden death of the supposedly healthy, active, energetic, business man, more or less "feeling well," is the most lamentable of present day catastrophies. The newspapers, more or less, teem with glaring head-lines saying that prominent citizen, (so and so), died suddenly last night, from an attack of acute in-

XUM

digestion, or while at business, or on the golf links, or while enjoying social pleasures. It is this sort of competent person of present business that seems to be the most frequent victim of this modern premature death. There must be something in the mental make-up of such men that brings about this condition. No doubt the roving, active business life with its successes and victories, tends to bring about a state of mind of self-sufficiency. It tends, also, to put to a lesser place of importance the physical make-up; it tends to set aside for a more convenient time an appraisal of the physical assets and liabilities of the body. Then too, it is probable that such men, full of the urge of business success and ambition to do more, will not give an ear to a warning from the physician; they discount what the doctor says to them, thinking that he has overdrawn the picture in order to "make the sale" of his idea. Physicians frequently warn of and foretell the disaster but the warning falls on unbelieving ears. Then, too, it is feared that examinations are sometimes not thorough enough to detect or bring to the mind of the physician himself the possible pit-falls of the cardiac malady discovered. Not infrequently, the physician may be hurried, may be tired, may be unappreciative of the possible behavior of the defective organs, under conditions of ordinary life, and, in this manner, or for these reasons, may fail to take the stand of adequately impressing the patient of dangers ahead.

The apparent increase of sudden deaths seems to warrant thoughts along the lines of prevention. A record of prevention of the occurrence of the unexpected sudden death is one much to be sought for through more careful prognostication of cases and the instillation of measures for prevention.

The Higher Standards of Medical Education of Today.

Medical education in America in the past twenty-five years has attained high standards, both as to essential requirements in candidates seeking medical education and as to the quality of the graduates. This epoch has been noteworthy because of the extraordinary success of the campaign of reform in medical education, led by the American Medical Association. While in 1900, standards of education in medicine in America were much inferior to those of England, Germany and France, today it may be affirmed that America holds a place of equality in this group of countries in the matter of its medical education. It may be true that there are differences in the excellence of the product. However the American university, in its medical department, turns out a most creditable graduate.

In this quarter of a century, when many new ideals of medical organization and medical teaching were advocated and put in practice, necessarily, there crept into the general scheme arrangements and ventures appearing as ideals to be excellent, some of which have not proven to be workable or desirable. The great victory of high standards of medical education was reached by marking medical schools in the following manner:

1. Showing of graduates before State Boards.
2. Requirements of preliminary education and its enforcement.
3. Character of medical curriculum.
4. Medical school plant.
5. Laboratory facilities and instruction.
6. Dispensary facilities and instruction.
7. Hospital facilities and instruction.
8. Extent to which the first two years are offered by men devoting tutors' time to teaching, and also evidence of original research.
9. Extent to which school is conducted for the profit of the faculty directly or indirectly, rather than for the teaching of medicine.
10. Libraries, museums, charts, and teaching equipment.

By this standard, medical schools of the country have been judged. These requirements, applied over a quarter of a century, have brought about salutary situations in medical education in the United States.

As to the future requirements of medical education in America, Dr. Bevan, *J. A. M. A.*, April 14, 1928, gives interesting thoughts from a rich experience.

An Appreciation.

The enactment by the last General Assembly of Virginia of new laws governing medical practice in Virginia, as well as other important legislation affecting the life and health of the people of Virginia, is an occasion of much importance in the history of this State. Each step forward, taken by legislative bodies, to bring to the citizenry greater security against disease and quackery, is worthy of keenest appreciation by all. The professional medical men who have taken part in this welfare movement can hardly be too greatly thanked. It is

not to be expected from the laity that much appreciation of their efforts will come, but it is certain that the members of the medical profession who have a keen sense of responsibility for the general welfare of the life and health of the public and who labor, in season and out, in many ways to conserve the health of the people and to prevent the spread and progress of disease, keenly appreciate the efforts of those members of the medical profession who by their fitness and selection, were able to render this big service to the State of Virginia.

It is to emphasize again this appreciation and credit for this splendid piece of salutary legislation, that the VIRGINIA MEDICAL MONTHLY draws attention to the names of men most active in bringing about this creditable legislation. The work started with the Committee appointed to make a report at our 1927 annual meeting on Amendments and Changes in our Medical Practice Act. This Committee was composed of Dr. J. W. Preston, chairman, Dr. A. L. Gray, Dr. T. S. Hening, Dr. Lawrence T. Price, Dr. P. St. L. Moncure, Dr. J. Bolling Jones, Dr. J. Shelton Horsley, Dr. H. U. Stephenson, and Dr. J. Allison Hodges.

When Legislature convened, this bill was turned over to the Public Policy and Public Health Committee, composed of Dr. L. T. Price, Chairman, Dr. H. U. Stephenson, Dr. P. St. L. Moncure, Dr. J. M. Emmett, and Dr. E. G. Williams, that they might have it considered by the General Assembly. In the work for the passage of this and other medical bills, these men were ably assisted by the following doctors in the General Assembly: Dr. E. L. Kendig and Dr. J. B. Woodson in the Senate, and Drs. J. T. Graham, J. Lewis Harvey, Dr. Wm. D. Prince, Dr. H. T. Smith, and Dr. J. W. Witten in the House.

In the name of the Medical Society of Virginia, we thank all of these men as well as the ones back home who gave able assistance upon every call.

A. G. B., JR.

The New Medical Practice Act Again.

The passage of House Bill No. 199 by the General Assembly of Virginia at its 1928 session was discussed editorially in the last issue of the Journal. It was pointed out that this law places on the statute books of this Commonwealth an act which, if properly enforced, will adequately safeguard from a medical practice standpoint the health and well-being of the people of the state. Attention was called also to the good work of the patron of this bill and the president of the Medical Society of Virginia and his committees in helping to bring about the enactment of this meritorious law. Too much credit cannot be given Dr. Preston and his associates for their untiring and successful advocacy of this legislative measure. In addition to the officers and legislative committees of the State Society, there are others of the profession also whose good work connected with the passage of this act should be recognized. Reference is made to the physicians, who were members of the last General Assembly. Each one of them took an active interest in all matters pertaining to the medical profession coming before the Legislature and they were in a position to do effective work along these lines.

Committees and individuals, not members of the General Assembly, can organize and do good work in securing the passage of a bill, but they do not have a voice in the committees when in the executive sessions, or on the floor of either House or Senate. The personal relationship existing between members of the General Assembly gives to a member of that body an influence and knowledge in shaping and determining legislation not possessed by an outsider.

It was in the executive session of these committees, it was on the floor of the House and Senate, it was through a personal influence with the members that the physicians, who were members of the last General Assembly, did valuable and effective work in the passage of House Bill 199. It is a rule of the General Assembly that only those connected officially with the work of the Legislature and those with special permits are allowed on the floor of the House or Senate when in session. These physician members were active in getting permits on the floor for the committees and friends interested in the Medical Practice Act. In fact, permission was obtained giving practically all the friends of House Bill 199 permits to come on the floor while it was under consideration.

These physicians in the Legislature manifested the same active and effective interest when the repeal of the pernicious poropathy act and the defeat of the Birrell chiropractor bill were accomplished by the General Assembly.

Dr. J. B. Woodson, of Nelson, Dr. John T. Graham, of Wythe, Dr. Lewis J. Harvey, of

XUM

Floyd, Dr. William D. Prince, of Sussex, Dr. H. T. Smith, of Grayson, and Dr. J. W. Witten, of Tazewell, were members of the last Virginia Legislature. They made a considerable sacrifice when they left their work and gave two months' time to the session of the General Assembly. They contributed considerably to the enactment of the Medical Practice legislation and their efforts will be appreciated by those interested in these measures.

E. L. K.

News Notes

Danville Meeting, Medical Society of Virginia.

For the first time in many years, the Medical Society of Virginia is to meet in Danville. The dates are October 16. 17 and 18, and we hope all members of the Society will reserve part of their vacations to be spent at this meeting. Our president this year is Dr. J. W. Preston, of Roanoke, Va. Members of the local committee of arrangements were named in the April issue of this journal. If there is any special information desired about the meeting, and you cannot locate your copy of the MONTHLY, inquiries may be sent to the general chairman, Dr. I. C. Harrison, Danville, Va., or to the Society's offices in Richmond.

Dr. Preston announces that he has had acceptances from Dr. Dean Lewis, of Baltimore, and Dr. E. Starr Judd, of Rochester, Minn., to be our guests for this occasion and to present addresses. Other speakers will be announced later. You cannot afford to miss this meeting. Begin making your plans now to be there.

Spring Graduate Seminar of the School of Medicine, Medical College of Virginia.

PURPOSE.—This graduate seminar is designed to serve busy practitioners of medicine by offering a brief sequential course of instruction in medicine, pediatrics, obstetrics, and surgery. As contemplated for several years, it will be started at the request of numerous members of the profession.

PLAN.—The work will begin at nine o'clock daily, run to twelve, and from two to five. Following the day's work an open forum will be conducted at which questions growing out of this work and submitted by those attending the seminar will be given free discussion. The six hours of the first day will be given to vital subjects in medicine, three hours the second day to pediatrics and three hours to obstetrics, and six hours the third day to surgery. A detailed outline of the work will be available later. Each person attending the seminar will be provided with an ample outline of the work, including bibliographies. This will make subsequent study convenient.

DATE.—The date for the seminar, May 24-26, falls immediately ahead of the beginning of the college commencement, which starts on Saturday night, May 26. During the seminar period no regular college classes will be in session although a number of students will still be taking final examinations.

COST.—To cover the cost of study outlines, special laboratory and clinical material and incidental expenses, a fee for the three-day seminar if $10 will be charged. Should there be any unexpended balance, it will be held intact for the use of the seminar the year following.

THE COMMITTEE.—The seminar committee, composed of Dr. William B. Porter, chairman, Dr. A. L. Gray, Dr. Wyndham B. Blanton, Dr. Greer Baughman, Dr. W. L. Peple, Dr. C. C. Haskell, and Dr. Manfred Call, dean of the school of medicine, will be pleased to have suggestions for the conduct of this first seminar. These should be addressed to the chairman of the committee.

The American Medical Association

Has issued call for its seventy-ninth annual meeting to be held in Minneapolis, Minn., June the 11th to 15th, inclusive. The House of Delegates will convene on Monday, the 11th, and the scientific assembly will open with the general meeting on the following evening at 8:30. Dr. Jabez N. Jackson, Kansas City, Mo., is president. *The Journal of the A. M. A.* has published a list of Minneapolis hotels, with rates. Those having trouble in arranging for accommodations might communicate with Dr. F. G. Benn, 1114 Donaldson Bldg., Minneapolis, chairman of the sub-committee on Hotels of the Local Committee of Arrangements.

There will be a special train over the Chicago Great Western railroad from Chicago to Minneapolis on Sunday night, June 10th, for the exclusive use of members of the A. M. A. and their families. This gives an opportunity to meet and visit with friends on the train. Reservations on this special train should be made at once. For information about trains from Chicago to Minneapolis, write R. A.

Bishop, General Passenger Agent, Chicago Great Western R. R., 122 South Michigan Boulevard, Chicago, Ill.

Virginia has three delegates in the House of Delegates this year: Dr. Southgate Leigh, Norfolk; Dr. J. W. Preston, Roanoke; and Dr. Murat Willis, Richmond.

Report Regarding National Leper Home.

Surgeon General Cumming, of the Public Health Service, has recently submitted to Congress an interesting report relating to the National Leper Home, located at Carville, La. During the past year fifty-six lepers were admitted to this hospital; twelve were readmitted and two patients were discharged on parole, as their leprosy was arrested, and considered no longer a menace to public health. Seventeen deaths occurred during the year at this hospital.

As to nativity, the patients come from twenty States and three of the insular possessions of the United States. Persons are also patients in the hospital from twenty-four foreign countries. Louisiana, Florida and Texas lead the States furnishing patients to the National Leper Home. At present 278 patients are under treatment there. Practically all of these patients are receiving chaulmoogra oil, which seems to be the most beneficial drug in the treatment of leprosy. It is administered in some cases by mouth in doses ranging from three drops to 300 drops daily. Some of the patients receive intramuscular injections of this oil, a painless method for these injections having been discovered by the Public Health Service.

Recognizing the great importance of occupation to prevent morbid introspection, paid employment is offered patients physically and mentally fit to work at light tasks, to the profit of both patients and hospital. Daily routine occupation is thus supplied to one-third of the total population of the hospital.

A small golf course has been started on the patients' campus, and a surprisingly large number of enthusiastic players has developed. A concrete tennis court has also been constructed for the patients.

Post-Graduate Clinics at the University of Virginia.

The post-graduate clinics held at the University of Virginia for three days, the middle of April, were attended by seventy-one doctors from all sections of Virginia and by several from outside the State. This is the third post-graduate clinic that has been held by the University Hospital and there has been a steady growth in attendance each time.

Clinics were conducted by: Dr. D. C. Smith on the treatment of syphilis; Dr. Allen F. Voshell on the management of fractures of the wrist; Dr. William E. Bray on serum and vaccine therapy; Dr. J. Edwin Wood on the treatment of cardiac failure; Dr. J. H. Neff on the treatment of gonorrhea in the male; Dr. William W. Waddell on feeding the normal infant; Dr. W. E. Brown on post-sanatorium care of tuberculosis; Dr. C. Bruce Morton on minor surgery, Dr. Staige D. Blackford on the treatment of anemia; Dr. Fletcher D. Woodward on procedures in nose and throat practice; and Dr. J. A. Waddell on useful new drugs. Round table discussions were held on topics furnished by those attending the clinic. On the first evening, the visitors upon invitation, attended the annual initiation of the Alpha Omega Alpha honorary medical fraternity upon which occasion, Dr. Edwin A. Alderman delivered an address.

Among the doctors attending the clinic were Drs. W. O. Smith, Alta Vista; Frances L. Thurman, Buena Vista; C. D. Bennett, Chatham; Charles A. Easley, Chatham; J. W. Wallace, Covington; H. McCoy, Crozet; H. T. Chelf, Culpeper; Granville Eastham, Culpeper; L. E. Fuller, R. F. D., Danville; B. F. Randolph, Evington; M. Edmond, Eagle Rock; B. A. Rice, Forest; D. M. Kipps, Front Royal; N. L. Kabler, Forest; R. L. Raiford, Franklin; Robert F. Jones, U. S. Navy; John E. Cole and C. Mason Smith, Fredericksburg; H. L. Baptist, Ivy; B. L. Carleton, J. C. Cutler, and E. R. Martin, Newport News; B. A. Pope; Newsoms; C. C. Page, Orange; W. W. Butler, Roanoke; E. W. Ross, Sugar Grove; Percy Harris, Scottsville; J. J. Waff, Shenandoah; G. R. Joyner, J. L. Rawls and F. A. Ward, Suffolk; C. A. Broaddus, Ruhlgrin; M. T. McCulloch, Troutville; J. A. Owen, Turbeville; G. O. Emerson, Wenonda; H. A. Latane, Alexandria; J. D. Miller, Bridgewater; W. D. Macon, M. L. Rea, T. H. Daniel, and J. C. Coulter, Charlottesville; R. W. Garnett, J. J. Neal and W. B. Fowlkes, Danville; J. F. Thaxton, Tye River; J. G. Brown, Woodville; L. H. Hoover, Clarksville; W. A. Kyger, Nortonsville; J. Bolling Jones, Petersburg; J. N. Clore, Madison; K. F. Woodward, New York City; Knowlton Redfield, Roanoke; J. S. Bradberry, North Carolina; Paul B.

XUM

Barringer, University; J. O. Mundy, Barboursville; J. C. King, Radford; F. P. Barrow, II, Portsmouth; J. R. Shacklette, Elkton; M. F. Woodward, Richmond; T. W. Sims, Eheart; R. A. Warren, Hot Springs; J. C. Everett, Nellysford; R. L. Page, Batesville; F. M. Perrow and Thomas E. Jones, Lynchburg; W. M. Thompson, Stevensburg; E. W. Davis, and J. C. Harshbarger, Harrisonburg; J. Powell Williams, Richmond; and T. P. Haney, Jr., Iuka, Miss.

Urban and Rural Infant-Mortality Rates in 1925.

The U. S. Bureau of the Census reports that the infant-mortality rate for cities in 33 States and the District of Columbia, which formed the birth-registration area in 1925, was nearly three points higher than for the rural area—that is, the city rate was 73 per 1,000 live births as compared with 70.3 for the rural areas.

When Infantile Paralysis is Epidemic.

Dr. Charles H. Mayo says that it is futile to attempt to run away from infantile paralysis after the epidemic begins, because recent experiments have shown that at such a time the germs of the disease exist in the throats of almost all children and of many adults, most of whom never show any signs of the sickness. "The best thing to do," he says, "is to remain at home, guard the children against overfatigue and indiscretions of diet, give them a little extra rest during the day, and watch their temperature."

Dr. W. R. Weisiger,

Richmond, Va., has returned home after a visit to New York, where he went to attend the reunion dinner of the Society of Ex-House Surgeons of the Manhattan Eye, Ear and Throat Hospital.

Early Diagnosis Campaign.

In connection with the "Early Diagnosis Campaign" for tuberculosis which has been held all over the country during March and April, the statement was made that it is estimated that there are 270,000 active but unknown and undiagnosed cases of tuberculosis in this country. This is why the campaign was put on, and a large number of people took advantage of the free examinations.

This early diagnosis work was made possible by the sale of Christmas seals, in view of which it is interesting to note that the amounts received for the past three years have been $55,856.36 for 1925; $57,350.14 for 1926; and $58,879.85 for 1927—a slight increase each year. These sales will help greatly in stamping out the white plague in our State and throughout the country.

Although the campaign is nominally over, the Virginia Tuberculosis Association, 511 Atlantic Life Building, Richmond, Va., will gladly arrange other public or private clinics upon request.

Dr. T. Paul Haney,

Of the class of '26, University of Virginia, Department of Medicine, after an internship at the University of Virginia Hospital, has accepted the position of full time county health officer of Tishomingo County, Miss., and has just left for his post of duty. He will be located at Iuka, Miss.

The Virginia State Dental Association

Will hold its fifty-ninth annual meeting in Roanoke, Va., May 29, 30 and 31, with headquarters at Hotel Patrick Henry. Members of the medical profession are always welcome at these sessions. Dr. W. G. Delp, Rural Retreat, is this year's president; Dr. R. C. Walden, Richmond, president-elect; and Dr. A. M. Wash, of the Medical College of Virginia, Richmond, secretary-treasurer.

The Accomack-Northampton Hospital,

Located at Nassawadox, Northampton County, Virginia, is to be opened during the summer. While the date has not been set definitely, it is expected that it will be sometime in July.

Italy Is Investigating Infant Feeding.

Prefects throughout Italy have been directed by the Minister of the Interior to obtain data on the prevalent methods of feeding infants. Physicians filling out certificates of infant deaths or of vaccination must report on the methods of feeding used for the child. Since vaccination is required by law within the first year of life, these combined reports should give data concerning the feeding of every infant born in Italy.

Italy Plans for Physical Education of Its Children.

Italy has placed the physical education of children in elementary and private schools under its recently established National Bureau of Physical and Moral Education, for which a royal decree provides an annual appropriation of 10,000,000 lire beginning with the fiscal year 1928-29. The establishment under the

bureau of normal schools for training teachers of physical education is authorized, and 400 applications have already been received for admission to the first school, which is to be established in Rome.

Appointed on State Board of Medical Examiners.

On nomination made by the Executive Council of the Medical Society of Virginia, Governor Byrd in April appointed Dr. Alexander F. Robertson, Jr., as a member of the State Board of Medical Examiners to fill the vacancy caused by the death of Dr. Robert Glasgow, for the unexpired term of four years ending April 1, 1930.

Dr. T. C. Harris,

After practicing for several years at East Radford, Va., has located in Centralia, Va., where he will continue the practice of his profession.

Dr. John R. Guerrant,

Of Wirtz, Va., after a visit in Richmond, Va., has gone to Salt Lake City, Utah, for the summer.

Child Marriage and the Age of Consent in India.

A bill raising the age of consent in India for unmarried girls to 16 and for married girls to 14 (the present ages being 14 and 13, respectively) has been under consideration by the Indian Government, which has recently decided to appoint a committee to investigate the whole subject of the age of consent and child marriage.

Dr. Vincent W. Archer,

University, Va., left the latter part of April for Rochester, Minn., where he will spend several weeks in X-ray work at the Mayo Clinic.

Dr. Edgar M. McPeak,

Of the class of '25, University of Virginia, Department of Medicine, has located in Washington, D. C., where he will be associated with Drs. Groover, Christie and Merritt, at 1909 Massachusetts Avenue, Northwest.

Dr. W. B. Cannon,

For sometime of Norfolk, Va., is now in Carthage, Mo., where he is convalescing from a prolonged illness.

The Maltbie Chemical Company Establishes a Resereach Fellowship.

Announcement has been made that the Maltbie Chemical Company of Newark, New Jersey, has contributed a grant for a research fellowship for the coming year to the Department of Chemistry of Princeton University.

The research work to be done under this fellowship will be fundamental in character and will cover certain phases of the chemistry of creosote and creosote compounds.

The establishment of this research fellowship is in line with the policy of the Maltbie Chemical Company to extend its research activities and to contribute to a study of the chemistry of important drugs.

Eugene Field Foundation for the Relief of Crippled Children.

This foundation was recently organized in St. Louis to raise $100,000 to meet the emergency caused by the exhaustion of the State appropriation for the care of crippled children. Ninety days after this work was begun at the University of Missouri last July, thirty-six children had been admitted from eighteen counties, and the hospital space was exhausted with four-fifths of the counties still to be heard from. The foundation is to include representative persons from all parts of Missouri and will aim to secure hospital care and education for indigent crippled children, provide appliances, and maintain hospital wards.

Dr. J. V. Jordan,

Covington, Va., returned home the latter part of April, from Canada, where he was called on account of the illness of his mother.

Dr. J. H. Crouch,

Recently with the Health Department of Fort Worth, Texas, has accepted the position of State Epidemiologist of Montana, and is making his headquarters at Helena, Mont. Dr. Crouch was formerly in charge of one of the health units under the Virginia State Board of Health.

Census of State Hospitals for Mental Diseases.

A preliminary report of the Department of Commerce states that 161 out of 165 state and federal hospitals for mental diseases reported 52,591 first admissions for the year 1926 as compared with 50,467 first admissions in 1922 for the full number of 165 hospitals. In the country as a whole, the number of mental patients under institutional care shows a steady increase, the number of mental patients under institutional care on January 1, 1910, being 159,096 as compared with 250,890 on January 1, 1927. The proportionate increase for the states with complete returns in 1926 was from 176.2 per 100,000 general population on January 1, 1910, to 219.1 on January 1, 1927. On

XUM

January 1, 1927, there were 5,603 patients in the four Virginia State hospitals, there having been a small steady increase each year.

Care of the Blind in Canada.

The Canadian National Institute for the Blind, a voluntary Dominion-wide organization created in 1918, has expended nearly $1,800,000 on behalf of the blind in Canada, about half of the amount coming from Government grants. It co-operates with the Canadian Council on Child Welfare and other agencies in efforts to obtain legislation by the Provinces for the prevention of blindness, preventive work in the schools, and the education of the juvenile blind. Canada now has five schools for the blind under provincial jurisdiction which, except the one in Quebec, provide free tuition and maintenance. Together, the five schools make provision for children from all the Provinces.

The Southern Society for Clinical Surgeons.

Which held its second annual meeting in St. Louis, Mo., in April, elected the following officers: President, Dr. J. A. Crisler, Jr. Memphis, Tenn.; vice-president, Dr. John C. Burch, Nashville, Tenn.; and Dr. John S. Horsley, Jr., re-elected secretary-treasurer. Dr. Carrington Williams, also of Richmond, was elected a member of the council of the Society.

Some Figures From Bureau of Vital Statistics.

To January 10, 1928, there had been reported 57,330 living births in Virginia for 1927, a total of just thirty-six more than for 1926. Of this number, 39,689 were reported by physicians, and 16,955 by midwives, while friends or the family reported the balance.

Accidental deaths claiming the largest numbers were automobile deaths, 12 per 100,000; burns 11.1; railroad accidents 5.5, and drownings 4.8.

It was stated that burns are the most important of all accidental deaths of children. Nearly 59 per cent of deaths from burns in 1926 were of children under fourteen years of age, the bulk of these being of children under five years of age.

In view of the number of deaths from drowning, it is suggested that all children should have the opportunity of bathing and learning to swim under safe supervision.

Dr. D. Hunter Marrow

Has returned to his home at Union Level, Va., after spending the winter at Daytona Beach, Fla., as is his custom.

"Sight-Saving" Classes in Public Schools.

At the beginning of 1927 Massachusetts had in its public schools twenty-eight sight-saving classes for children with defective sight. These were distributed in fourteen cities, and four more cities were making arrangements to open classes. The division of the blind of the State department of education grants $500 yearly to each class and supplies every new class with $250 worth of equipment. In the whole United States there are some 290 sight-saving classes.

Portugal Strengthens Its Child Labor Laws.

A decree put into effect in Portugal toward the end of 1927 amended the previous laws by providing that no boy under sixteen nor girl under eighteen may be employed without a physician's certificate of physical fitness and proof of ability to read and write. The minimum age for employment was fixed at twelve, children between this age and fourteen being permitted to work not more than six hours a day with one or more rest periods, and children between fourteen and sixteen not more than seven hours. Sunday work is prohibited to boys under sixteen and girls under eighteen, and no child under sixteen may be employed in acrobatic performances, in work underground, or on night work. In work underground and night work, which are also prohibited to women, certain exceptions are permitted in emergencies and in temporary work on perishable material.

Some Delegates to the State Democratic Convention.

Reports from several counties show the following doctors among the delegates elected to the State Democratic convention to be held in Roanoke, Va., June 21: *Isle of Wight*, Dr. R. Lee Seward; *Southampton*, Drs. S. J. Railey and W. T. McLemore; *Petersburg City*, Dr. W. A. Reese; *Mecklenburg*, Dr. B. J. Montgomery; *Amherst*, Drs. G. T. Harris and E. M. Sandidge.

Dr. E. N. Lillard,

After recuperating at his former home at Graves Mill, Va., has located at Brandy, Va., where he is engaged in general practice.

Addition to St. Elizabeth's Hospital.

It is announced that the building at 613 West Grace Street, this city, which has been used as one of the nurses' homes of St. Elizabeth's Hospital, will be turned into an annex

of the hospital. The building at 609 West Grace has recently been purchased and will be made into a large nurses' home.

It is interesting to learn that a radio service with ear phone connections has recently been installed in this hospital. As there is no loud speaker, the service is devoid of noise.

Dr. Preston Parks,

For sometime of Parksley, Va., has moved to Wilmington, N. C., and has offices in Murchison Building, that city.

The Virginia Section, Society American Bacteriologists,

Held its annual meeting in Richmond, April the 3rd and 4th, Dr. Frederick M. Shaw, of the Medical College of Virginia, presiding. Several interesting papers were presented. The following officers were elected for the ensuing year: Chairman, Mr. Aubrey H. Straus, Richmond; vice-chairman, Mr. W. F. Lawrence, Portsmouth; secretary-treasurer, Mr. J. G. Wahlin, Richmond. The Committee on Arrangements to take care of the National Meeting of the Society of American Bacteriologists in Richmond, December 27-29, 1928, is composed of: Mr. L. C. Bird, chairman, Mr. Aubrey H. Straus, and Drs. Regena Beck and E. C. L. Miller.

The Playtime of Schoolboys of Newark.

The Rotary Club of Newark, N. J., made an effort last year to find out how the school boys of that city amused themselves out of school. It got reports for nearly 28,000 boys of eight to seventeen years who were attending the city's public and parochial schools. More than half of them went to the "movies" once a week, nearly 6,000 went twice a week, and most of the others two or three times a month. For a majority of the boys the streets were the playgrounds, and one in nine belonged to some self-organized gang. Only one boy in five was under the influence of a church or other organization doing social work for boys. Better recreational opportunities and vocational guidance for continuation-school boys of fourteen and fifteen were especially recommended.

A "Melting Pot" for Little Foreigners.

The Morgan Memorial Day Nursery, located in the heart of Boston's foreign section, during 1927 cared for ninety-nine children from seventy families of nineteen different nationalities.

The Virginia Society of Oto-Laryngology and Ophthalmology

Held its ninth annual meeting in Newport News Va., under the presidency of Dr. C. S. Dodd, of Petersburg. The meeting was in every way a success, there being an attendance of sixty-nine. Dr. James N. Greear, of Washington, D. C., and Dr. Samuel Skillern, of Philadelphia, invited guests, presented interesting papers in addition to several by members. Luncheon was held at Hotel Warwick. Dr. Frank Hanger, Staunton, was elected president; Dr. James Morrison, Lynchburg, vice-president; and Dr. Fletcher D. Woodward, University, was re-elected secretary-treasurer. The next meeting will be held at Staunton, Va., in May, 1929.

The Medical Association of the Valley of Virginia

Will hold its regular semi-annual meeting at the Nurses' Home of Rockingham Memorial Hospital, Harrisonburg, Va., May 31, the first session being at 11 A. M. A number of interesting papers are listed on the program including one by invited guest, Dr. Thomas McCrae, of Philadelphia. Luncheon will be served in the intermission between the morning and afternoon sessions. Officers of the Society are: Dr. C. O. Dearmont, White Post, president; Drs. L. M. Allen, Winchester, and H. G. Middlekauff, Weyers Cave, vice-presidents; Dr. L. F. Hansbrough, Front Royal, treasurer, and Dr. Allen T. Hawthorne, Winchester, secretary.

Dr. and Mrs. E. T. Hargrave,

Norfolk, Va., passed through Richmond, the latter part of April, on a motor trip to Charlottesville and through the Valley of Virginia.

Dr. John W. Devine,

Lynchburg, Va., announces that in the future his practice will be limited to general surgery. He has offices at 610 Church Street, that city.

Higher Compensation for Child Injured While Illegally Employed.

A boy of fifteen lost his arm in a Cleveland factory while he was working in violation of three provisions of the child labor law, being under sixteen and working at night on a dangerous machine without an employment certificate. The Industrial Commission of Ohio granted him 50 per cent additional compensation over the regular workmen's compensation for this type of injury, for the first time apply-

XUM

ing to a violation of the child labor law the provision of the constitutional amendment of 1924 empowering the commission to grant additional compensation up to 50 per cent in cases of injury shown to be due to "the failure of the employer to comply with any specific requirement for the protection of the lives, health, or safety of employees enacted by the General Assembly."

Married.

Dr. Raymond DeVan Kimbrough, of the class of '24, University of Virginia, Department of Medicine, and Miss Janet Haldane Coleman, Williamsburg, Va., May 5.

Dr. and Mrs. W. J. Wigington,

Of Java, Va., have recently returned from a visit to Miami, Fla.

Heads Rotary Club.

Dr. Francis Lee Thurman has been elected president of the Buena Vista, Va., Rotary Club, for the year beginning July 1.

Dr. A. B. Siewers,

Formerly of Richmond, Va., and a member of the class of '18, Medical College of Virginia, but now of Syracuse, N. Y., has received a fellowship in the Child Guidance Clinic at Cleveland, Ohio, upon completion of which he will return to his practice in Syracuse.

The West Virginia State Medical Association

Will hold its annual meeting at Fairmont, W. Va., May 22-24, under the presidency of Dr. C. A. Ray, of Charleston. An excellent program has been arranged and the usual good time will be had by those who attend.

For Sale—

Valley of Virginia $7,000.00 general practice, in growing town of 1,200 people, for price of modern residence. Competition right. Apply "X. Y. Z.", care VIRGINIA MEDICAL MONTHLY. (Adv.)

Wanted—

To rent at once, well-equipped office and furnished home, for six months, in a city which promises excellent permanent location. Address "A. W.", care the VIRGINIA MEDICAL MONTHLY. (Adv.)

Wanted—

Eye, Ear, Nose and Throat specialist for association with established group located in best part of the South. Only high class, experienced man, good appearance and pleasant personality, who is willing to work hard and cooperate with group need apply. Salary increased if makes good. Southern man preferred. Give age, training and experience in first letter. Wonderful opportunity for the right man. All communications will be held confidential. Address "No. 120", care VIRGINIA MEDICAL MONTHLY. (Adv.)

For Sale—

The following equipment of the late Dr. E. H. Heaton: Large Fisher cabinet—latest type machine; Morse wave generator; deep therapy lamp; and galvanic battery outfit. All are in perfect condition, having been used only one year. Will sell for half price. Address Mrs. E. H. Heaton, Leesburg, Va. (*Adv.*)

Obituary Records

Dr. William Patterson Isley,

Of Hampton, Va., died April 22, at the age of 55 years. He was a native of Burlington, N. C., and studied medicine at Vanderbilt University, Nashville, Tenn., from which he graduated in 1899. He had been a member of the Medical Society of Virginia since 1905. His wife and several children survive him.

Dr. Thomas Edward Peery,

Bluefield, W. Va., member of the Medical Society of Virginia since 1908, died March 26, of chronic nephritis, at the age of fifty-four years. He was graduated in medicine from the College of Physicians and Surgeons, of Baltimore in 1895, and was formerly a member of the Staff of the Bluefield Sanitarium.

Dr. Nathaniel S. Smith,

Chincoteague, Va., graduate of the University of Maryland, Department of Medicine, Baltimore, in 1864, died April 3rd, death being due to chronic valvular disease of the heart. He served as a pharmacist in the U. S. Navy in 1864 and 1865, and from 1866, practiced his profession continuously in Accomac County, Virginia, to about two weeks before his death.

Mrs. M. W. Jewett,

Wife of Dr. M. W. Jewett, of Ivanhoe, Va., died at her home in that place, February 22, 1928, after an illness of three years.

Dr. Zenas Fearing, Jr.,

Elizabeth Ctiy, N. C., died March 17, at the age of fifty-four years. He graduated in medicine from the former University College of Medicine, Richmond, in 1901, and later located in North Carolina. He was at one time mayor of Elizabeth City.